

AN ALTERNATIVE BOUNDARIES FOR NEW JERSEY'S COASTAL ZONE

NEW JERSEY
DEPARTMENT OF
ENVIRONMENTAL PROTECTION
OFFICE OF COASTAL
ZONE MANAGEMENT

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ALTERNATIVE BOUNDARIES
FOR
NEW JERSEY'S COASTAL ZONE

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CONTENTS

	PAGE
Executive Summary A Preliminary Boundary	1
Introduction	3
The Boundary Element of the Management Program	5
Boundary Requirements of the Federal Coastal Zone Management Act	6
New Jersey's Coastal Zone Boundary Identification Process	8
Coastal Waters	11
Territorial Sea	14
Alternative Definitions of Key Terms and Phrases	17
Inland Boundary Alternative Concepts	21
Concept No. 1 - Water's Edge	21
Concept No. 2 - Water's Edge Buffer	23
Concept No. 3 - Flood Hazard Area Buffer	26
Concept No. 4 - CAFRA	28
Concept No. 5 - Original CAFRA	28
Concept No. 6 - Pine Barrens/Selected Watersheds	31
Concept No. 7 - Coastal Plain	33
Concept No. 8 - State	33
Concept No. 9 - Hackensack Meadowlands Commission District	36
Concept No. 10- Urban Waterfront	36
CAFRA and the Coastal Zone Boundary	41
Excluded Federal Lands	42
Uplands Beyond the Coastal Zone	44
Changes in the Boundary	45
The Next Steps in the Boundary Identification Process	46
Appendix 1 Tidal Waters of New Jersey	47
Appendix 2 Coastal Zone Boundaries in Other States	54

LIST OF FIGURES

- Figure 1 - Preliminary Boundary of the New Jersey Coastal Zone
- Figure 2 - 17 County Coastal Planning Area
- Figure 3 - New Jersey Tidal Limits
- Figure 4 - Territorial Sea of New Jersey
- Figure 5 - Water's Edge Concept
- Figure 6 - Tidelands Delineation Map
- Figure 7 - Wetlands Map
- Figure 8 - Water's Edge Buffer Concept
- Figure 9 - Flood Hazard Area Buffer Concept
- Figure 10- CAFRA Area
- Figure 11- Original CAFRA Area
- Figure 12- Pine Barrens/Selected Watersheds
- Figure 13- Coastal Plain
- Figure 14- State
- Figure 15- Hackensack Meadowlands Development Commission District
- Figure 16- Urban Waterfront
- Figure 17- Excluded Federal Lands

EXECUTIVE SUMMARY

This staff working paper presents alternative boundaries for New Jersey's Coastal Zone under the Federal Coastal Zone Management Act of 1972, as amended. Diverse pressures confront the coast of New Jersey. Different publics hold various preceptions of the importance of various parts of the coastal waters and shorelands of the state.

This staff paper recommends a preliminary, working boundary for the coastal zone. It combines several alternative boundary concepts. Figure 1 displays a geographic approximation of the coastal zone that results from this hybrid approach.

Coastal waters are defined generally by the territorial sea and the tidal limit of New Jersey watercourses.

The inland boundary includes two tiers of coastal management: a first tier of direct state regulation over highly significant uses of coastal resources and a second tier of indirect state regulation of other uses of coastal resources.

Along the less developed stretches of the coast where the fragile coastal ecosystem still thrives, the first tier of direct state regulation may range in width from several hundred feet to several miles from the ocean or a coastal bay or major river. Along the more intensely developed stretches of New Jersey's urban waterfronts, the upland boundary may be more narrow and range from zero to 1,000 feet inland. Along tidal streams in more rural or less developed areas, an inland buffer area may be established as the second tier of indirect state regulation above the water's edge of the tidal stream.

In addition, unique watersheds that are special parts of the coastal ecosystem, the Mullica, Cedar Creek, and Forked River drainage basins in the Pine Barrens, are included in the preliminary boundary of the coastal zone.

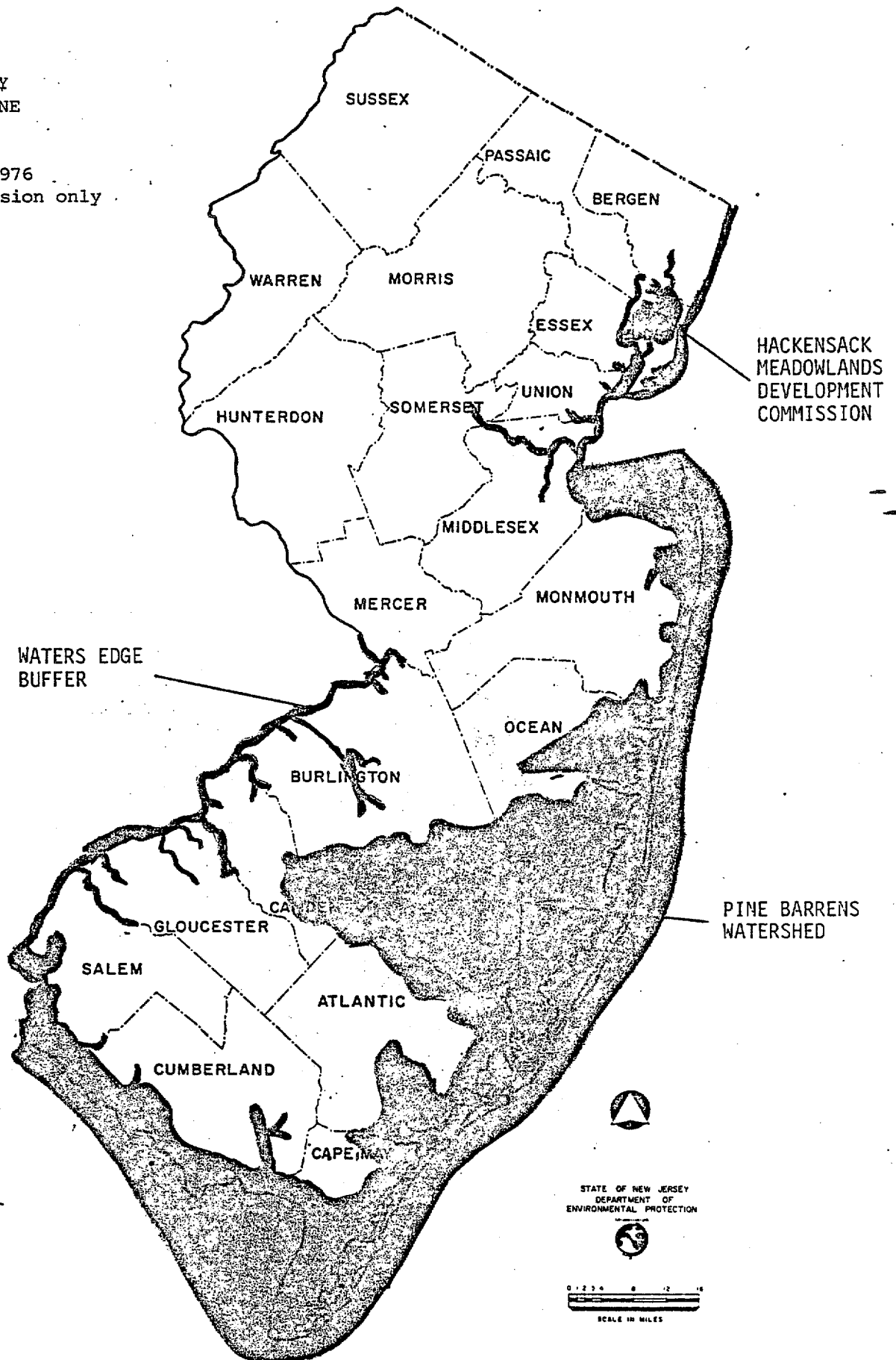
Further, the entire district managed by the Hackensack Meadowlands Development Commission is included as a special entity within the coastal zone.

This paper also presents the boundary identification process in some detail, outlines alternative boundary concepts, and analyzes the advantages and disadvantages of individual concepts and combinations of these alternatives. Ultimately, the boundary of the coastal zone will be refined based on further land and water use analysis by DEP/OCZM, prior to the final definition of the coastal zone by the Governor, at the time of his submission of a management program for approval to the U. S. Secretary of Commerce.

Figure 1. Preliminary Boundary of the New Jersey Coastal Zone

PRELIMINARY
COASTAL ZONE
BOUNDARY

November 1976
for discussion only



INTRODUCTION

This staff working paper discusses alternative boundaries for New Jersey's coastal zone. These alternatives range in scope from only the shoreline and coastal waters to the entire state. Some alternatives may require additional legislation, while others can be implemented today under existing laws. These alternatives are presented for comments, criticisms, and vigorous public debate.

Numerous competing and conflicting pressures confront the New Jersey coast, from the restoration of the decayed waterfront of the Hudson River, to the protection of rich and varied estuaries behind the Atlantic Ocean and barrier islands, to the location of energy facilities along the Delaware River. The process of coastal planning initiated under the Federal Coastal Zone Management Act aims to institute a coherent statewide system for making those coastal land and water use decisions of more than local significance.

To achieve this goal, the Federal Coastal Zone Management Act of 1972, as amended in 1976, offers a coastal state four major incentives for developing a management program for its coastal zone; (1) Federal funds will be available to implement and improve the management program, (2) Federal activities covered by the approved program, including licenses, permits, grant applications, development plans for oil and gas exploration, and development projects will be required to be consistent with the state's approved program, (3) Federal financial assistance will be available to offset some of the costs of the onshore effects of offshore oil and gas exploration and production, as well as the siting of other coastal energy facilities, and (4) Federal funds will be available for sharing the cost of land acquisition for shorefront access.

The State of New Jersey must define the boundary for the geographic area to be managed by its coastal zone management program. When completed, the Governor will submit this program for approval to the Secretary of the U. S. Department of Commerce.

In some respects, New Jersey is ahead of many of the 34 states and territories participating in the nation-wide coastal zone management program. Part of our coast has already been designated under the Coastal Area Facility Review Act (CAFRA) of 1973 as a special area of greater than local significance. The area established by this state law, however, does not fulfill all of the requirements of the Federal Coastal Zone Management Act.

A final introductory note of caution is appropriate here. The boundary of New Jersey's coastal zone must address only the perceived and articulated coastal problems and opportunities of New Jersey. Coastal zone management is not a panacea. Nor is it necessarily the appropriate vehicle for attempting solutions to pressing public policy problems that lack a direct coastal dimension.

Drawing a geographic boundary line is an arbitrary act. However, a line must be drawn. The geographic scope of New Jersey's coastal zone should be determined with a sensitivity to the built and natural environment of the coast and with a pragmatic desire to do the job of coastal zone management well in the special area where the land meets the sea.

THE BOUNDARY ELEMENT OF THE MANAGEMENT PROGRAM

Selecting a coastal zone boundary cannot be neatly divorced from the other aspects of the coastal planning process. Three additional questions must be considered simultaneously.

(1) What coastal activities are of particular concern?

A boundary is only a means to an end, and that end must be generally defined before a boundary can be selected. The siting of coastal energy facilities, for example, might require inclusion of some areas in the coastal zone that would not be considered if the preservation of existing beaches was the only criterion. The New Jersey Department of Environmental Protection, Office of Coastal Zone Management (DEP/OCZM) has tentatively identified four coastal activities of importance in selecting a boundary: recreational swimming, boating, and fishing; energy production; commercial fishing; and educational, aesthetic, and other uses of natural and historic areas.

The coastal zone management program must also consider many issues which flow from concern with these four uses, including: housing, commercial development, industrial development, transportation, agriculture, and protection of natural land and water resources.

(2) What specific geographic areas should be included in the coastal zone?

Certain geographic areas are special and may merit inclusion and perhaps special treatment in the coastal zone management program of New Jersey. For example, specific policies could be adopted for some urban waterfront areas, the Hackensack Meadowlands, or specific natural areas such as undeveloped barrier beach islands. DEP/OCZM aims to identify these areas through environmental analysis, public input through a nomination process for "geographic areas of particular concern," and meetings with local officials, private citizens, and interest groups.

Other areas should perhaps receive less emphasis in the state coastal zone management program; for example, highly developed and intensely urbanized locations where the past decisions of the public and private sectors have largely determined the future character and uses of these built-up areas.

(3) What state, county, and municipal laws exist to implement the coastal zone management program?

The coastal zone management program must be responsive to the needs and desires of the people of the state of New Jersey; in short, it must be politically feasible and desirable, or it will simply become another document on a planner's bookshelf. State laws provide varying degrees of political responsibility for managing different land and water uses and different parts of the coast. Depending upon the uses and areas included in the coastal zone management program, New Jersey might require additional legislation, or specific cooperative agreements with counties and municipalities in order to implement its coastal zone management program. These concerns must be considered when exploring alternative coastal zone boundaries.

BOUNDARY REQUIREMENTS OF THE FEDERAL COASTAL ZONE MANAGEMENT ACT

To be approved by the U. S. Secretary of Commerce, a state coastal zone management program must meet several procedural and substantive standards. In the U. S. Department of Commerce, the National Oceanic and Atmospheric Administration, Office of Coastal Zone Management (NOAA-OCZM) has grouped these statutory requirements into seven basic program approval elements:

- (1) Boundaries
- (2) Land and Water Uses
- (3) Geographic Areas of Particular Concern
- (4) Public and Governmental Involvement
- (5) State-Federal Interaction and National Interests
- (6) Organization
- (7) Authorities

The seven elements must all be closely intertwined in the final program. For the purpose of outlining alternative boundaries, it is essential that alternative land and water uses policies, alternative areas to be designated as geographic areas of particular concern, and alternative authorities available or necessary to implement a management program be considered in concert with the boundary identification process.

The Federal Coastal Zone Management Act, adopted federal rules and regulations (15 CFR Part 923), and "threshold papers" prepared by NOAA/OCZM provide guidance to a state in defining a coastal zone boundary, although these standards are subject to different interpretations.

Section 304(1) of the Coastal Zone Management Act gives the following definition:

"Coastal Zone" means the coastal waters (including lands therein and thereunder) and the adjacent shorelands (including waters therein and thereunder), strongly influenced by each other and in proximity to the shorelines of the several coastal states, and includes islands, transitional and intertidal areas, salt marshes, wetlands, and beaches. The zone extends...seaward to the outer limit of the United States territorial sea. The zone extends inland from the shoreline only to the extent necessary to control shorelands, the uses of which have a direct and significant impact on the coastal waters. Excluded from the coastal zone are lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government, its officers or agents.

According to the NOAA-OCZM boundary threshold paper, a state must develop and apply a procedure for identifying its coastal zone. At a minimum, the coastal zone identified by this procedure must include:

- (a) the territorial sea,
- (b) coastal waters,
- (c) transitional and intertidal areas,
- (d) salt marshes and wetlands,
- (e) beaches,
- (f) upland areas - "...inland from the shorelines only to the extent necessary to control shorelands, the uses of which have a direct and significant impact on coastal waters."

The definition of these key terms is the heart of the process of identifying the coastal zone boundary.

Alternative definitions for these terms are explored in further sections of this paper. It is important to stress at this point that definitions of these terms vary widely from state to state. Appendix 2 indicates the range of definitions by indicating various coastal zone boundaries in other states.

NEW JERSEY'S COASTAL ZONE BOUNDARY IDENTIFICATION PROCESS

Since New Jersey began coastal planning with federal funds in June 1974, three major steps have been taken to identify a coastal zone boundary. First, a planning boundary was established. Second, existing coastal boundaries in New Jersey -- in particular, the CAFRA, Wetlands and Tidelands boundaries -- were reviewed. And, third, coastal resources, uses, issues, and problems have been analyzed in order to devise the alternative boundary concepts proposed in this staff working paper.

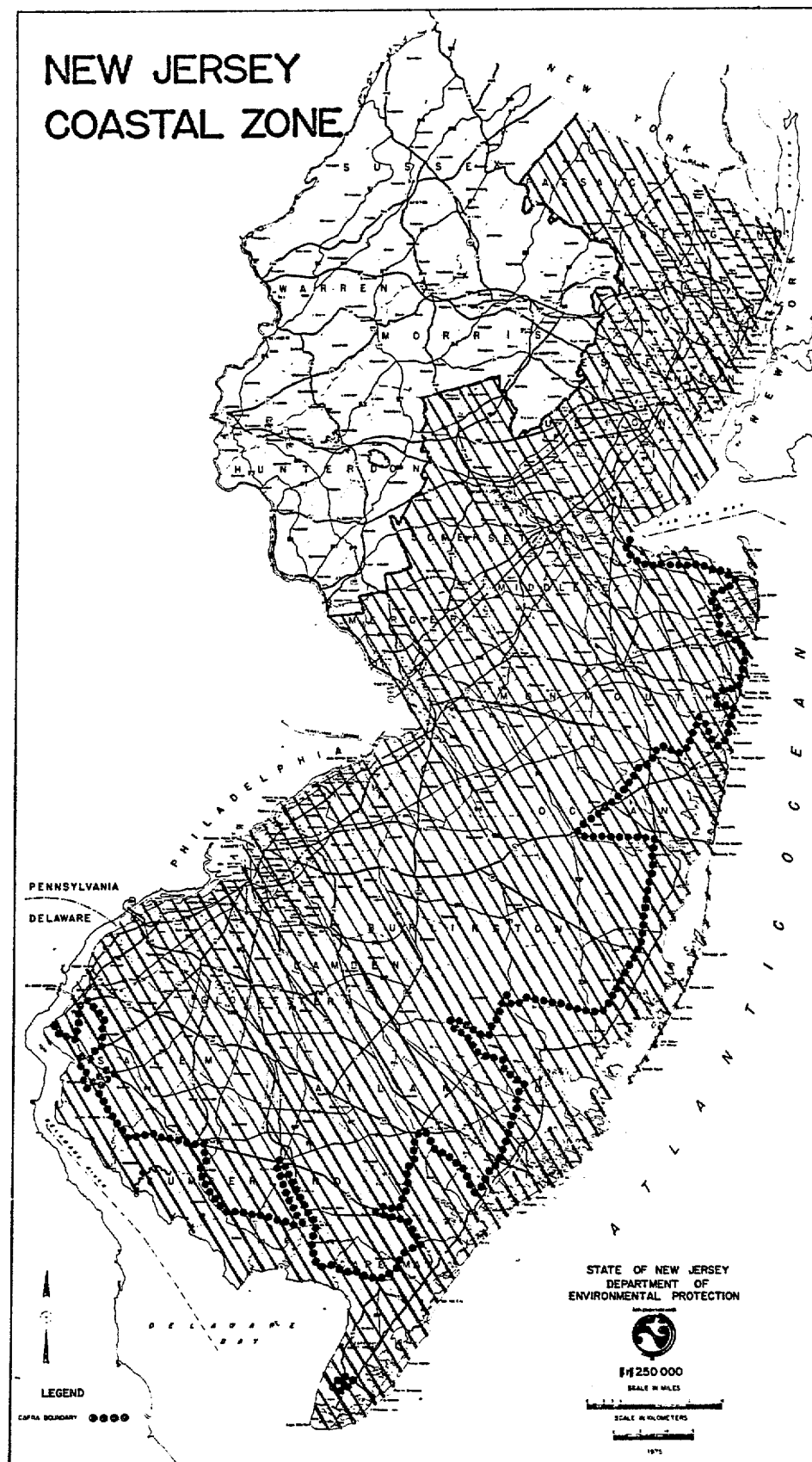
As a first step under the federally financed coastal zone management program, the New Jersey Department of Environmental Protection identified a coastal planning area that included the entire jurisdiction of all counties with any waters under tidal influence. This area, shown in Figure 2, extends to 17 counties and excludes only four northwestern counties: Sussex, Warren, Hunterdon, and Morris. While this boundary definition represents a potential coastal zone boundary, it was established primarily for the purposes of conducting initial coastal planning and policy studies. It is expected that the final coastal zone boundary will be considerably less inclusive than the planning area.

Second, DEP-OCZM has examined the considerable practical experience acquired in New Jersey in defining a coastal boundary. For example, at the direction of the Legislature in the Wetlands Act of 1970 (N.J.S.A. 13:9A-1 et. seq.), the Department of Environmental Protection established the landward limit of coastal wetlands on maps of a scale of 1:2,400 (1 inch equals 200 feet).

In the Coastal Area Facility Review Act (CAFRA) of 1973 (N.J.S.A. 13:19-1 et. seq.), the Legislature, relying in part on environmental analysis by the Department of Environmental Protection, established a boundary for the Coastal Area (N.J.S.A. 13:19-4) using the State's seaward limit, its bayward boundaries with New York and Delaware, and a system of roads, railroads, rights-of-way, and county boundaries. A previous staff working paper of DEP-OCZM, "The Development of the Boundary of the New Jersey Coastal Area Facility Review Act," May 1976, documents the CAFRA boundary identification process.

The Department of Environmental Protection has also established the Tidelands Delineation Program, in the Office of Environmental Analysis, to determine the extent of the State's riparian jurisdiction (N.J.S.A. 13:1B et. seq.).

Figure 2 - 17 County Coastal Planning Area



As the third step in the coastal zone boundary identification process, DEP-OCZM has inventoried the built and natural environment of the potential coastal zone and analyzed diverse coastal resources and land and water uses within the potential coastal zone. These studies, particularly An Inventory of the New Jersey Coastal Area, 1975, Interim Land Use and Density Guidelines for the Coastal Area (May 1976), Alternatives for the Coast (October 1976), and approximately twenty staff issue and policy alternative papers on coastal resources and coastal land and water uses, assist in defining rationally the appropriate geographic scope of alternative coastal resource management strategies for New Jersey.

Three major elements constitute the state's coastal zone boundary: (1) the extent of its coastal waters, (2) the extent of its territorial sea, and (3) the inland boundary. This staff working paper will present alternative boundary concepts for each constituent element of New Jersey's coastal zone boundary.

These conceptual alternatives are based on analysis of the land and water areas of the potential coastal zone whose uses should be managed. A combination of these concepts will be proposed, which leads to the working, preliminary boundary outlined for public debate in the Executive Summary. Upon completion of ongoing DEP-OCZM impact analysis, constraint analysis, and suitability analysis, additional recommendations may be advanced to modify the preliminary working boundary presented here for public scrutiny.

COASTAL WATERS

The coastal zone must include the coastal waters. The Federal Coastal Zone Management Act (Section 304(2) defines coastal waters as "...those waters, adjacent to the shorelines, which contain a measurable quantity or percentage of seawater, including, but not limited to, sounds, bays, lagoons, bayous, ponds, and estuaries."

In New Jersey, coastal waters along the Atlantic coast are assumed to extend landward from the limit of the territorial sea. Coastal waters in the Delaware Bay extend landward from the State's boundary in the bay with the State of Delaware. The same principle applies to New Jersey's water boundaries with New York and with Pennsylvania.

The landward extent of the state's coastal waters and bays, lagoons, ponds, rivers, streams, and estuaries can be defined either by the limit of saltwater intrusion or tidal influence. We have explored these two alternative methods and recommend the use of a tidal influence criterion as the dividing line between waters that are coastal and waters that are not.

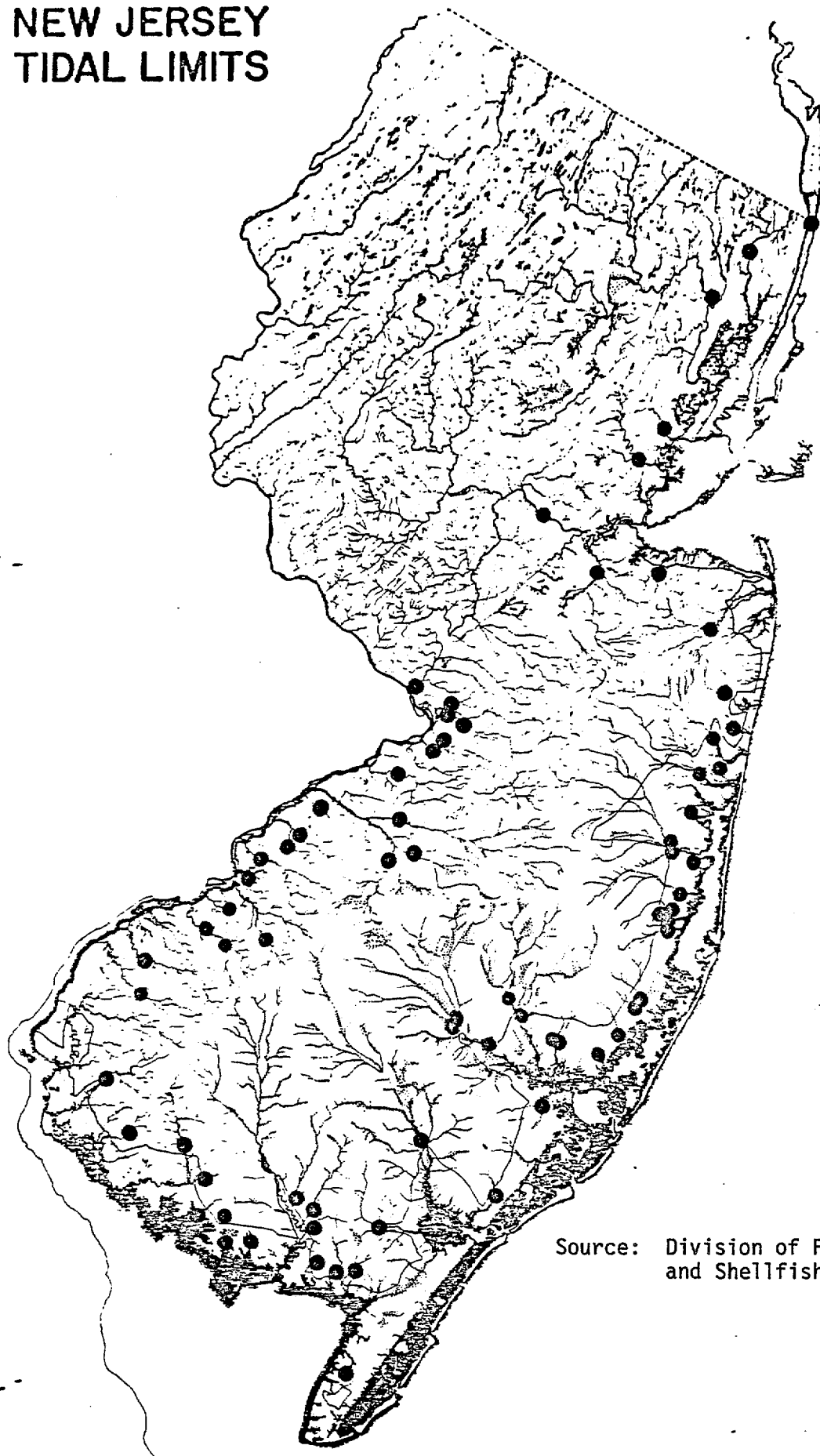
A salinity threshold is arbitrary and not ecologically significant. Salinities are highly variable in all dimensions and thus are not appropriate for virtually fixed boundaries. Also, a salinity threshold would have to be computed, not just measured. Finally, too many estuaries exist in New Jersey's potential coastal zone; measurements would be required for each of these estuaries to use a salinity criterion in establishing the landward extent of coastal waters.

The landward penetration of tidal influence in a water course does, however, provide a readily measurable dividing line for coastal and non-coastal waters. Two methods of indicating the upstream limit of tidal activity have been considered.

First, the annual Compendium of New Jersey Fish Laws, published by the New Jersey Department of Environmental Protection, Division of Fish, Game and Shellfisheries includes a suitable tidal limit for major streams, using a nearby dam or bridge to indicate the approximate limit of tidal activity. Figure 3 maps these tidal limits. Appendix 1 lists tidal streams, approximate tidal limits, and affected municipalities, by county. These tidal limits have also been mapped by DEP-OCZM at a scale of 1:24,000 and 1:250,000. Second, the limit of tidal activity extends approximately from the sea to the point where the 20 foot elevation contour above mean sea level crosses a river surface. This 20 foot elevation crossing of each tidal watercourse could be mapped and used as the basis for the definition of coastal waters in New Jersey's coastal zone.

Figure 3 - New Jersey Tidal Limits

NEW JERSEY TIDAL LIMITS



● APPROXIMATE TIDAL LIMIT

Source: Division of Fish, Game,
and Shellfisheries

STATE OF NEW JERSEY
DEPARTMENT OF
ENVIRONMENTAL PROTECTION



1:1250,000

SCALE IN FEET

1" = 1250,000'

SCALE IN KILOMETERS

1" = 31,680'

1975

The use of a tidal activity criterion for defining coastal waters results in a more inclusive coastal zone, than would use of a criterion based on a measurable percentage of seawater, as tidal influence extends further inland than does seawater.

In conclusion, this paper recommends the following definition of the coastal waters of New Jersey:

"The coastal waters of New Jersey include the Atlantic Ocean to the limit of New Jersey's seaward jurisdiction; the Hudson River, Upper New York Bay, Kill van Kull, Arthur Kill, and Raritan Bay to the New York State boundary; Delaware River and Bay to the State of Delaware boundary; Delaware River to the Pennsylvania boundary; and the tidal portion of the Delaware, Raritan, Passaic, and Hackensack Rivers, including the tidal portion of their tributaries and other tidal streams of the coastal plain."

TERRITORIAL SEA

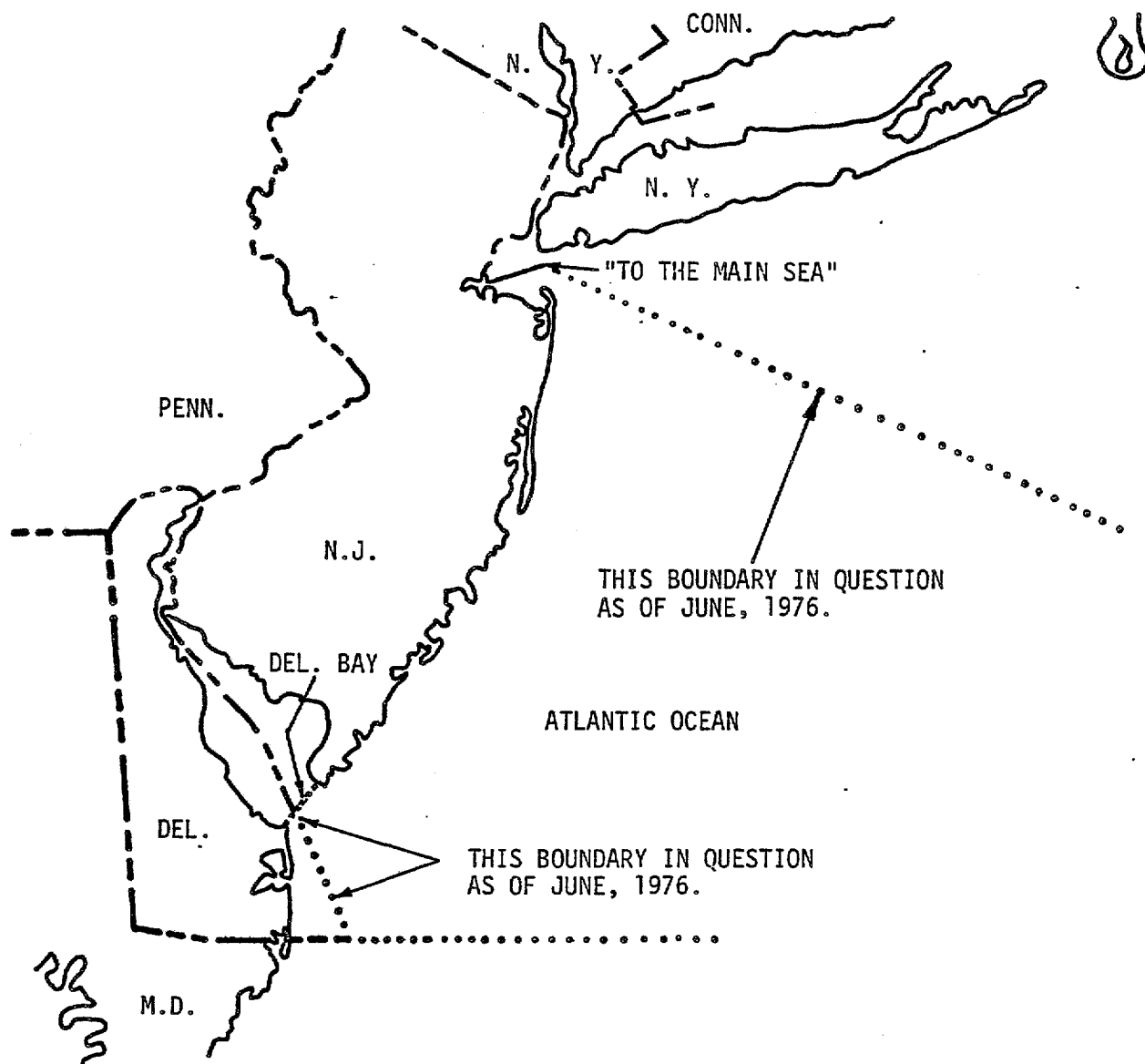
The Federal Coastal Zone Management Act requires that a state's coastal zone extend "seaward to the outer limit of the United States territorial sea." At present, this limit is three nautical miles from the appropriate base lines established by international law and defined precisely by the United States of America.

New Jersey's boundary through Raritan Bay with New York was defined by a joint, bi-state boundary commission in 1887, as approved by the New Jersey legislature in 1888. New Jersey's boundary in the Delaware Bay was established by a United States Supreme Court decision, New Jersey v. Delaware (291 U. S. 361 1933).

The extensions on the open sea of New Jersey's boundaries with New York and Delaware are not determined. The issue of the lateral seaward boundary is receiving focused attention as a result of the 1976 amendments to the Federal Coastal Zone Management Act, which created a Coastal Energy Impact Program to assist states financially to cope with the onshore effects of offshore oil and gas energy activities. Each state's share of this financial assistance depends in part upon the acreage of leased Outer Continental Shelf acreage adjacent to a particular coastal state. Adjacency is determined by the extension of the lateral seaward boundary of each state.

The New Jersey Department of Environmental Protection is taking steps to reach an agreement on the lateral seaward boundaries of New Jersey with Delaware and with New York. Under existing rules of international law, the boundary could be extended seaward at the midpoint of existing ship channels, both in the Delaware Bay and in the New York Bight. Figure 4 approximately indicates the extent of New Jersey's territorial sea, and the alternatives for the lateral extension of New Jersey's seaward boundary.

Figure 4 Territorial Sea of New Jersey



INLAND BOUNDARY

The geographic scope of New Jersey's coastal zone management program depends upon the selected inland boundary of the coastal zone. As much of the federal statutory, regulatory, and NOAA-OCZM threshold paper language on coastal zone boundary determination is general and subject to various interpretations, this paper will offer alternative definitions for the key legal terms and phrases. These alternative definitions have important implications for the geographic extent of New Jersey's coastal zone. This section therefore will clarify the meaning of these words and discuss, where appropriate, the availability of data in New Jersey necessary to establish the geographic extent of the constituent elements of the coastal zone boundary. In particular, the operational definition finally selected for the phrase "direct and significant impacts on coastal waters" will have a great effect on the boundary determination process.

The value attached to various parts of the coast by the public, as articulated in state laws, comments at public meetings, and other means, also effects the desirability and feasibility of particular alternative inland boundary options. Another important concern is the degree of coastal resource management that may appropriately accompany a particular inland boundary choice. For example, two distinct tiers of coastal management may be appropriate for the coastal zone, with a narrow tier along the shoreline and a more extensive tier stretching to the inland boundary. Also, alternative forms of coastal decision making involving various levels of government must be considered at the same time as boundary options are evaluated.

The inland boundary for the coastal zone must also reflect the incredible diversity of New Jersey's coastal zone. In particular, the heavily industrialized and built-up urban waterfront areas should perhaps receive a different degree of state-level coastal management attention than the less developed, still rural coastal areas along the Atlantic Ocean and Delaware Bay.

Finally, another consideration that should be added to all inland boundary options is blatantly subjective; it concerns a sense of coastal "feeling." The smell of salty air, the sound of a gull over a broad estuary, and the sight of a salt marsh all announce the nearness of the coast. Subjective criteria should help expand or contract an inland boundary alternative concept.

ALTERNATIVE DEFINITIONS OF KEY TERMS AND PHRASES

"Transitional and Intertidal Areas"

These geographic areas are lands directly affected by the maximum extent of the tides. New Jersey's riparian lands are those lands now or formerly flowed by the mean high tide. The limit of riparian jurisdiction is a political boundary, based on a biophysical perimeter, and is therefore applicable for defining the extent of transitional and intertidal areas. New Jersey's riparian lands are currently being mapped on a scale of 1:2,400 (1 inch equals 200 feet) under the Department's Tidelands Delineation Program, which is coordinated with the coastal zone management program development effort.

"Salt Marshes and Wetlands"

At the direction of the Legislature in the Wetlands Act of 1970 (N.J.S.A. 13:9A-1 et. seq.) the Department established the landward limit of coastal wetlands on maps at a scale of 1:2,400 (1 inch equals 200 feet) with accompanying property ownership information.

"Beaches"

Beaches are defined as the coastal foreshore up to the line of vegetation or the most seaward cultural feature (road or highway or railroad). The Department has not yet systematically mapped the beaches of the state. However, false color infrared photographs of the coast do exist at a scale of 1:80,000 from which maps could be prepared.

"Shorelands"

Shorelands are those lands at the water's edge, where the land meets the sea or other coastal waters. The seaward edge of shorelands is the mean low tide line. The landward edge in the context of coastal zone management includes all areas "the uses of which have a direct and significant impact on coastal waters."

"Uses"

Land and water uses are activities that take place on or in land or water, such as residential development, dredging, and agriculture. The term can be quite extensive, or can be limited to specified uses, as defined by law or by administrative action.

Three aspects of a land or water use are important in the context of coastal zone boundaries: first, "what" takes place, the totality that is a use such as a nuclear generating station, a housing development, or farm; second, "how" the use takes place, such as the constituent activities of building and operating a use, for example grading, paving, disturbance of soils, and fertilizing; third, "where" the use takes place, specifically the geographic location and the unique combination of natural and cultural features that make up a place.

"Impacts"

An impact is the result of an activity that changes the built or natural environment. In reference to coastal zone management, impacts may have numerous dimensions, including biological, physical, chemical, aesthetic, or socio-economic. Impacts may also be adverse or beneficial.

"Direct"

Numerous alternative definitions exist for the term "direct" in the context of coastal zone management, but in practice most alternatives fall within the meaning of two alternatives.

Option A

"A direct impact is a change in the built or natural environment that is the immediate result of an impacting activity, without any intermediate processes between the impacting activity or the change that it causes."

This definition implies physical adjacency. And the impact must be delivered in, on, or immediately adjacent to coastal waters. This definition of "direct" also implies a narrow coastal zone.

Option B

"A direct impact is a change in the built or natural environment that is either the immediate result of an impacting activity or is linked to the impacting activity through an identified chain of cause and effect without further human intervention."

This definition of "direct" does not imply physical adjacency, but rather implies a direct cause or linkage irrespective of the physical distance between the activity and coastal waters. An example should clarify the broadness of this definition of "direct." One example of a "direct" impact would be paving that causes an increase in surface runoff, which causes an increase in sediment turbidity in coastal waters, which causes decrease of light penetration, which causes a decrease of algal photosynthesis, which causes a decrease in the population of aquatic organisms depending upon the algae for food. This chain of cause and effect is clearly identified. It is direct. And it proceeds without further human intervention.

An example of an "indirect" impact would be a new sewer line that makes possible the construction of new housing, whose paving then causes an increase in surface runoff, etc. Although building the sewer line directly makes possible the housing, an intervening human process, housing construction, comes between the two activities. The storm water runoff is thus an indirect impact of the sewer line construction.

"Significant"

Again, numerous potential definitions exist for this word. However most alternatives fall within two broad alternatives.

Option A

"A significant impact is a measurable change in the built or a natural environment."

This broad definition does not include any value judgments. This definition depends only on the sensitivity of human senses and scientific instruments to detect changes in the environment.

Option B

"A significant impact is a measurable change in the built or natural environment that is cause for concern."

This alternative definition of "significant" narrows the scope of the definition by introducing value judgements. This definition does not, however, define what is of concern and who should define concern. Further, it does not specify how narrow this scope of concern should be.

Four principal sources can be used to define those impacts which are "significant" using the definition that incorporates the concept of "cause for concern": (1) existing environmental policies, standards, regulations, and laws, (2) concerns voiced by elected representatives of the people of New Jersey, (3) concerns of planners and scientists, both public and private, concerned about the New Jersey coast, and (4) concerns of interest groups and citizens expressed at public meetings and in written correspondence with the New Jersey Office of Coastal Zone Management.

The specific concerns addressed by these groups, agencies, and individuals will change as circumstances and perceptions of circumstances change. A single standard or measure of "cause for concern" cannot be built into the definition of "significant." For this reason, this paper proposes that Option B, a flexible definition that can respond to changing uses, impacts, attitudes, and improvements in our understanding of the coastal environment, be adopted.

Mapping the Coastal Zone Inland Boundary

A common concern of each of the inland boundary alternative concepts is how to delineate the boundary itself. Boundaries can be mapped based on natural features, political subdivisions, property lines, or cultural features such as roads and highways.

The inland boundary concept selected must weigh the advantages and disadvantages of precise natural ecosystems considerations vs. the need to insure that all property owners and concerned citizens can quickly determine whether individual parcels of land are included or excluded from the coastal zone. Use of municipal or county boundaries would provide an easily mapped line. Similarly, use of existing roadways and rights-of-ways, the inland boundary mapping system used for the CAFRA boundary, also provides an easily determined identified boundary.

ALTERNATIVE INLAND BOUNDARY CONCEPTS

Ten alternative inland coastal zone boundary concepts are presented here. In geographic scope they range from a narrow strip of coastal land to the entire state. Given the diversity of the New Jersey coast and the diversity of its problems and opportunities, a hybrid approach combining selected features of various alternative boundary concepts may be most appropriate for determining the coastal zone boundary of New Jersey. The alternative boundary concepts in this section depend upon various definitions of the key terms, including "direct and significant impacts on coastal waters", presented above, as well as upon analyses of coastal resources, and land and water uses of the coast of New Jersey.

It is also important to stress that the operational definitions used in laying out a boundary must be considered together with the degree of coastal management required or desired. Each of the alternative concepts presented here could be implemented under either, or a combination, of the general options offered by the Federal Coastal Zone Management Act for the organization and implementation of an approved management program: (1) state standards for local implementation, (2) state implementation, and (3) state review of local implementation.

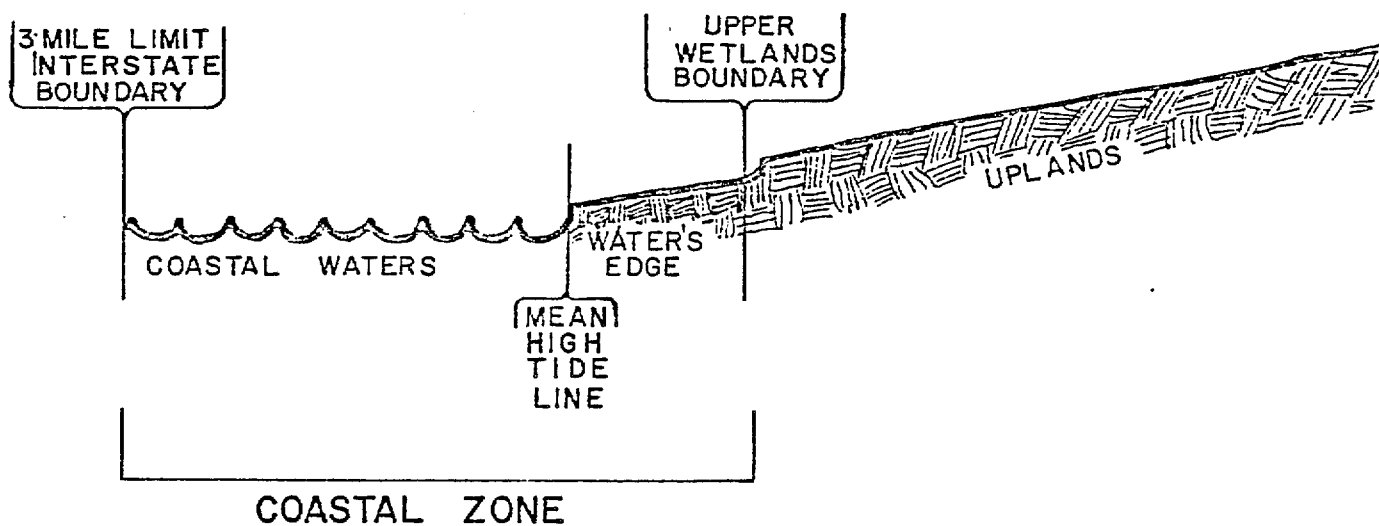
Concept No. 1 - Water's Edge

This alternative relies on the narrowest definition of the "direct impact", as one that is the immediate result of an activity. This implies that activities must be in, on, or adjacent to coastal waters. By employing the narrowest definition of "significance" as "cause for concern," this alternative leads to the narrowest coastal zone. It would include only those land and water features required to be included by the NOAA-OCZM boundary threshold paper. "Shorelands" would be defined as coterminous with the most landward of such coastal features as transitional and intertidal areas, salt marshes, wetlands and beaches. Figure 5 sketches this narrow inland boundary concept.

In practice, the existing upper wetlands boundary, where mapped by the Department, and the mean high tide or riparian line, would approximate the landward extent of the coastal zone under this alternative concept. Within this narrow landward area, the State would exercise direct control over land and water uses both as to where development takes place and how it takes place under the Wetlands and Waterfront Development permit programs now administered by the Department's Division of Marine Services.

Figure 5 - Water's Edge Concept

WATER'S EDGE CONCEPT



"WHAT USE TAKES PLACE"

Under this alternative, the strip of shoreland would be narrow, but the directness and significance of impacts to be regulated is unquestioned. However, in terms of management decisions, the water's edge may influence upland activities, particularly for projects that need access to the water, such as dredging for berths for ocean-going vessels.

Figure 6 presents a sample, at true scale, of a tidelands delineation map. In those parts of the state without regulated wetlands, the historical mean high tide line could constitute the landward boundary of the coastal zone under this alternative concept. Figure 7 presents a sample, again at true scale, of a map showing regulated wetlands. Where such wetlands exist in New Jersey, the upper wetlands boundary would be the coastal zone landward boundary, under this alternative concept.

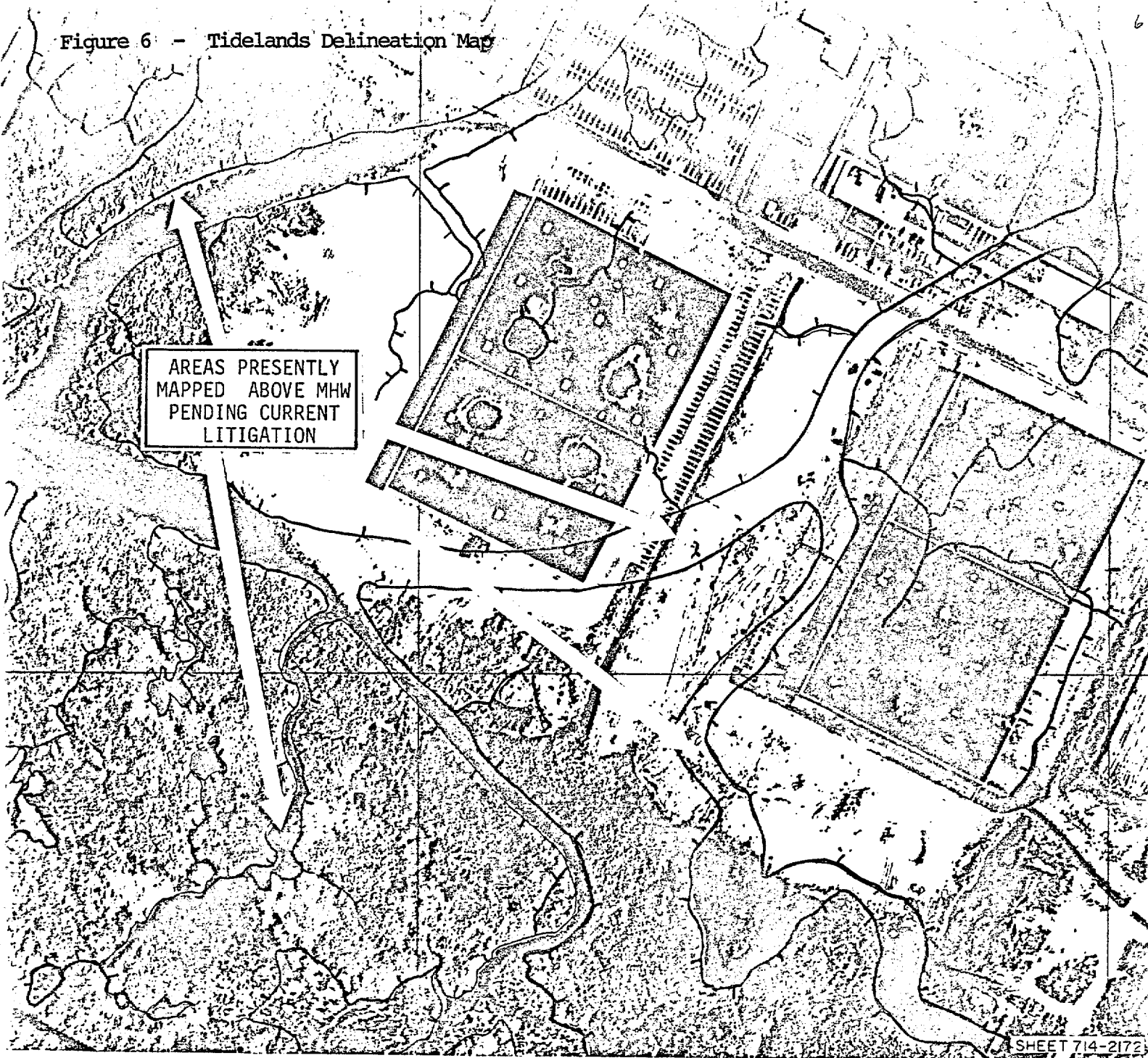
Concept No. 2 - Water's Edge Buffer

Concept No. 2 enlarges slightly on the concept of physical adjacency used in Concept No. 1, and expands the scope of activities deemed to be "significant." The result is a coastal zone that includes the tier identified in Concept No. 1, as well as a narrow buffer at the water's edge. The width of the buffer is the inland extent of the coastal zone and depends upon the significance of impacting activities. As a matter of convenience, the boundary should follow readily identifiable cultural features, such as roads and rights-of-way.

The advantage of the second tier is that a variety of land uses that influence the quality of coastal waters could come under either direct or indirect coastal management. Site preparation for numerous construction activities, for example, produces increased turbidity in streams that flow directly into the coastal waters. Construction of a variety of energy and industrial facilities along the coast could also influence the social, economic, and aesthetic character of a coastal region.

The extent of the buffer might be the area from 100-1,000 feet landward of the mean high tide or riparian line. The boundary itself could then be the nearest cultural feature. The width of the buffer to the Water's Edge could be defined as a specified portion of the flood plain of the relevant tidal stream or river. However, in only a few watersheds in the potential coastal zone have flood plains been delineated and adopted by the Department of Environmental Protection.

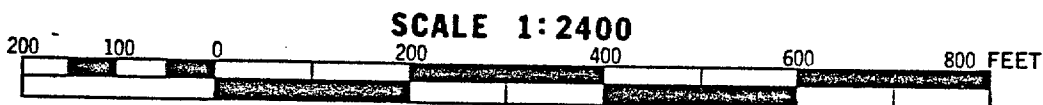
Figure 6 - Tidelands Delineation Map



HACKENSACK MEADOWLANDS

CROMAKILL CREEK

AREAS PRESENTLY
APPED ABOVE MHW
ENDING CURRENT
LITIGATION



STATE OF NEW JERSEY

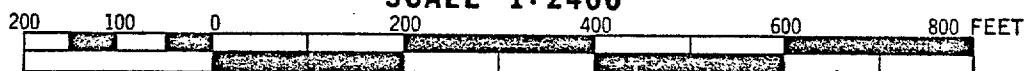
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Figure 7 - Wetlands Map







DOUBLE CREEK SHIP BOTTOM

SCALE 1:2400



LEGEND

-  MONUMENTED CONTROL POINT
-  PHOTOGRAMMETRIC CONTROL POINT
-  SPECIES LINE
-  UPPER (INLAND) WETLANDS BOUNDARY

- A SPARTINA ALTERNIFLORA (HIGH VIGOR)-
SALT MARSH CORD GRASS
- B SPARTINA ALTERNIFLORA (LOW VIGOR)-
SALT MARSH CORD GRASS
- C SPARTINA PATENS -
SALT MEADOW GRASS

- D DISTICHLIS SPICATA -
SPIKE GRASS
- E IVA FRUTESCENS -
HIGHTIDE BUSH
- H BACCHARIS HALIMIFOLIA -
SEA MYRTLE
- J PREDOMINANTLY BARE GROUND
- 5 PHRAMES COMMUNIS -
COMMON REED
- 12 SPARTINA CYNOSUROIDES -
SALT REED GRASS
- 14 PANICUM VIRGATUM -
SWITCH GRASS
- 15 SCIRPUS OLNEYI -
OLNEY'S BULRUSH

SPECIES COMBINATIONS ARE INDICATED
BY MULTIPLE LETTERS FOR EXAMPLE: B/C

Along these water courses, the coastal zone boundary could be the cultural feature nearest the landward extent of the delineated flood hazard area. Where flood plains have not been delineated by DEP, the coastal zone boundary could be the flood hazard area as indicated by federal insurance maps, prepared by the U. S. Department of Housing and Urban Development (HUD), which are based either on USGS flood prone maps or on HUD's own engineering method delineation of flood plains. In short, the buffer under this concept could easily be mapped, perhaps at a scale of 1:24,000.

Under this alternative concept, the State would exercise direct management responsibility over land and water uses in the water's edge area. Management within the buffer area would be based on various performance standards to protect the quality of coastal waters. Examples of these performance standards would include soil erosion and sediment control standards, water quality standards, "critical areas" requirements for review of septic systems in sewer hookups -- all water-oriented controls authorized by laws administered by the Department of Environmental Protection. It should be recognized that performance standards are only an indirect method of land use control. But indirect state regulation over how development takes place may in many instances have the practical effect of determining what takes place and where it should take place.

Figure 8 sketches the Water's Edge Buffer concept.

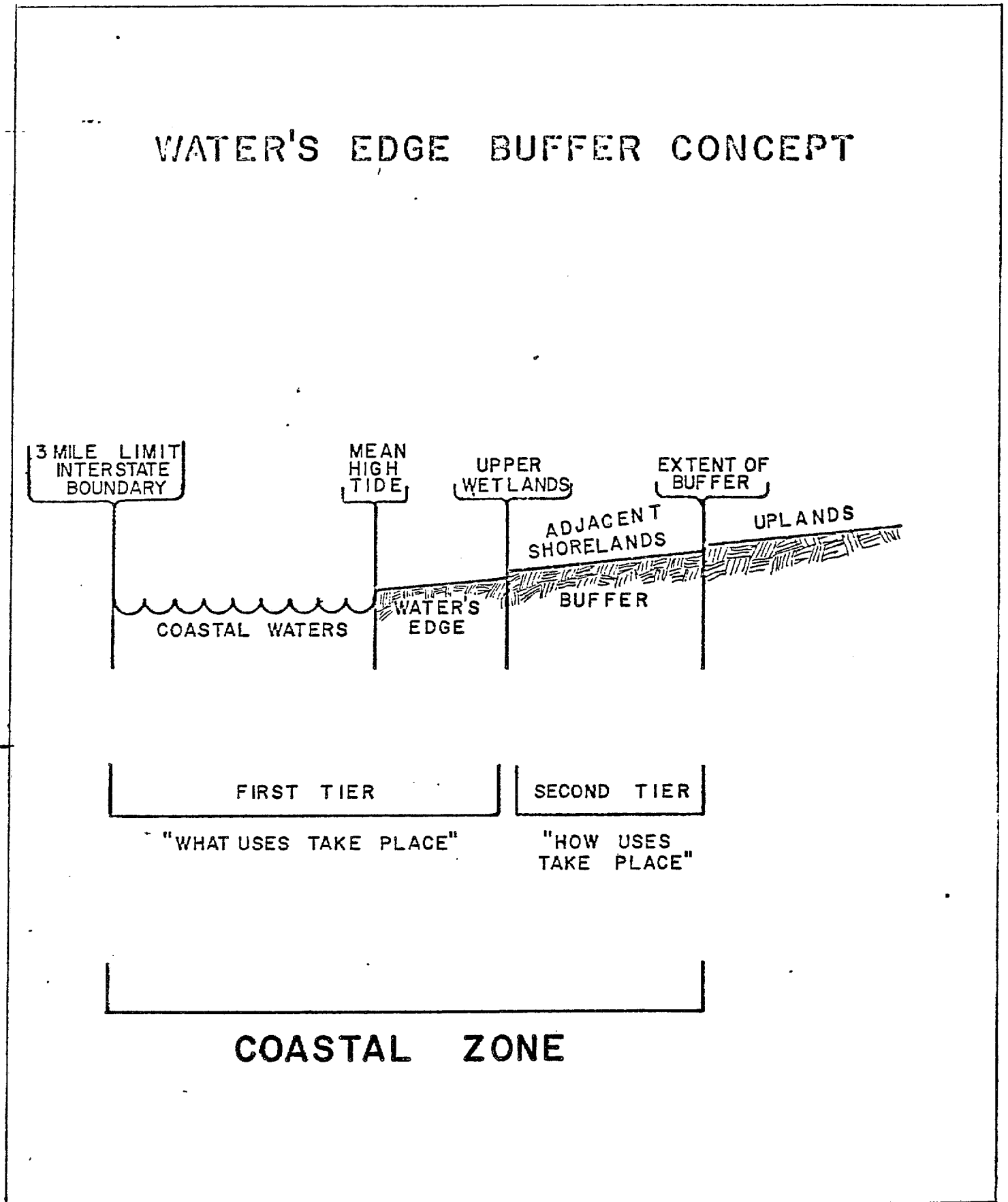
Concept No. 3 - Flood Hazard Area Buffer

This option is derived from a very similar set of operational definitions for "direct and significant impacts" as alternative concepts No. 1 and 2. Under this option, the coastal zone would include two tiers: a first tier including the water's edge and a delineated flood plain, and a second tier as a buffer area between the delineated flood plain and an appropriately near cultural feature.

Where flood plains have been delineated by the Department of Environmental Protection or by HUD, the landward extent of the flood hazard area would constitute the boundary of the first tier. Where flood plains have not been delineated by either HUD or DEP, the USGS maps of flood prone areas (100 year flood) would be the landward extent of the first tier.

Uses in areas up to the designated maximum flood line would be included in the consideration of "what" should take place and "where" it should take place, under the coastal management scheme.

Figure 8 - Water's Edge Buffer Concept



Upland from the first tier boundary, a buffer strip of perhaps 1,000 feet, plus the distance to the nearest readily mapable cultural feature, could be adopted as a second tier where the state concern, for coastal zone management purposes, would be "how" uses take place. In short, performance standards could be the implementing tool in this area.

This option implies a more inclusive definition of "concern" under the operational definition of "significant," with regard to the Federal Coastal Zone Management Act. It also differs from Concept No. 2 in the manner in which specific land areas would be managed. In particular, the first tier of direct state management is broader under this alternative, than under the Water's Edge Buffer concept.

Figure 9 sketches the Flood Hazard Area Buffer concept.

Concept No. 4 - CAFRA

The Coastal Area defined by the present CAFRA boundary in the New Jersey Coastal Area Facility Review Act (N.J.S.A. 13:19-4), includes approximately 18 percent of state's land area and more than 75 percent of the state's water area. This Coastal Area, stretching from the Raritan Bay to Sandy Hook, along the Atlantic Ocean shoreline and up the Delaware Bay to the Delaware Memorial Bridge is an alternative boundary concept. The existing landward boundary is well defined using a system of roads, rights-of-way, and county boundaries. The boundary determination process has been previously documented in an earlier staff report.

By itself, the CAFRA boundary is not acceptable as the coastal zone boundary for the State of New Jersey for several reasons. First, all transitional and intertidal areas, and all salt marshes and wetlands along New Jersey's coastal waters are not included within the present CAFRA boundary. Some of these land and water features exist along the Delaware River, and in northeastern New Jersey. However, the present CAFRA boundary does provide a solid basis for the landward element of the coastal zone boundary in the CAFRA portions of the state.

Figure 10 depicts the present landward CAFRA boundary.

Concept No. 5 - Original CAFRA

This option is based on the coastal area defined in the "Major Coastal Area Facilities Review Act", a bill (A-1429) introduced in July 17, 1972, by then Assembly Speaker Kean. This bill, as amended, eventually became the Coastal Area Facility Review Act of 1973.

Figure 9 - Flood Hazard Area Buffer Concept

FLOOD HAZARD BUFFER CONCEPT

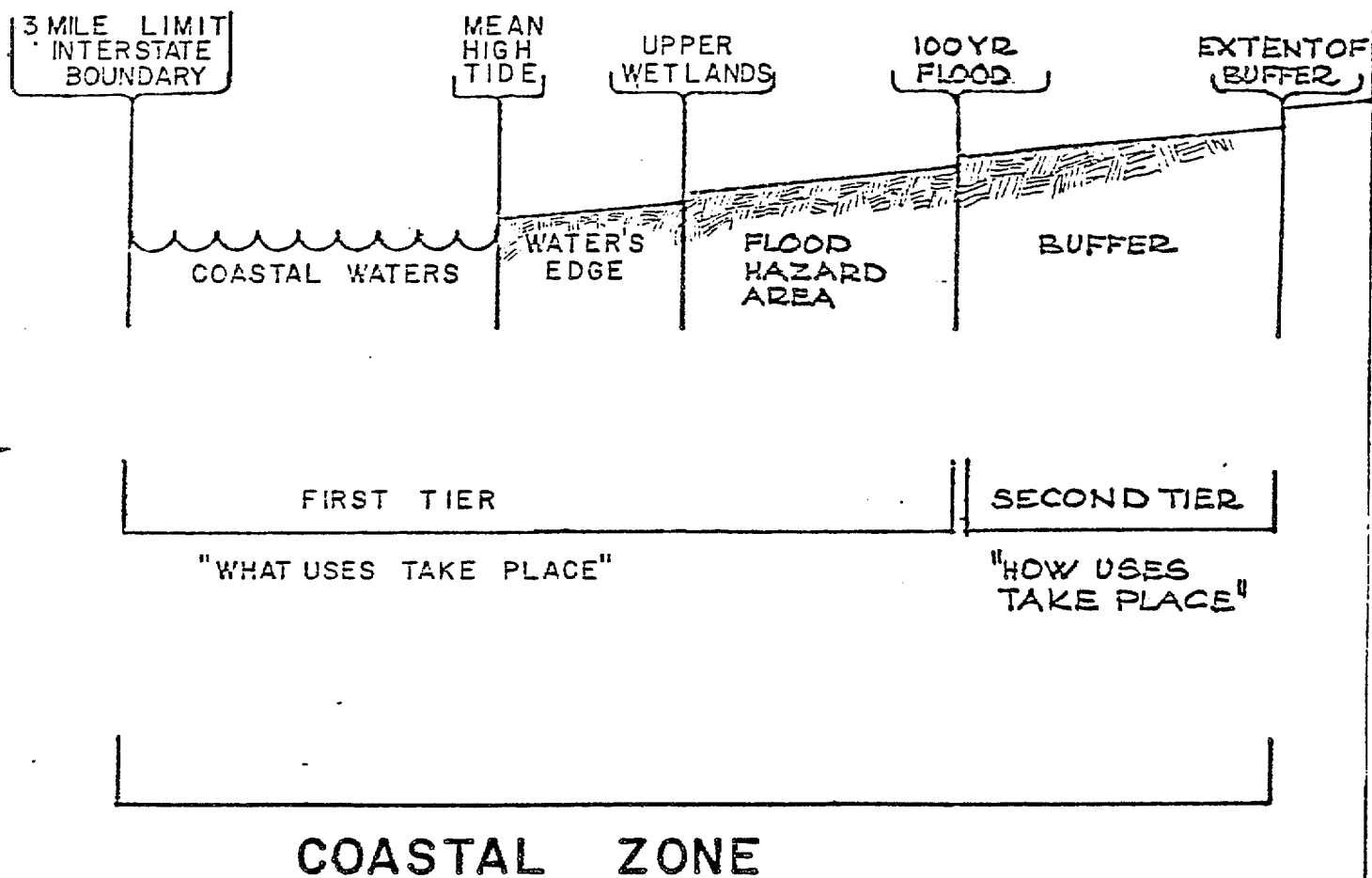
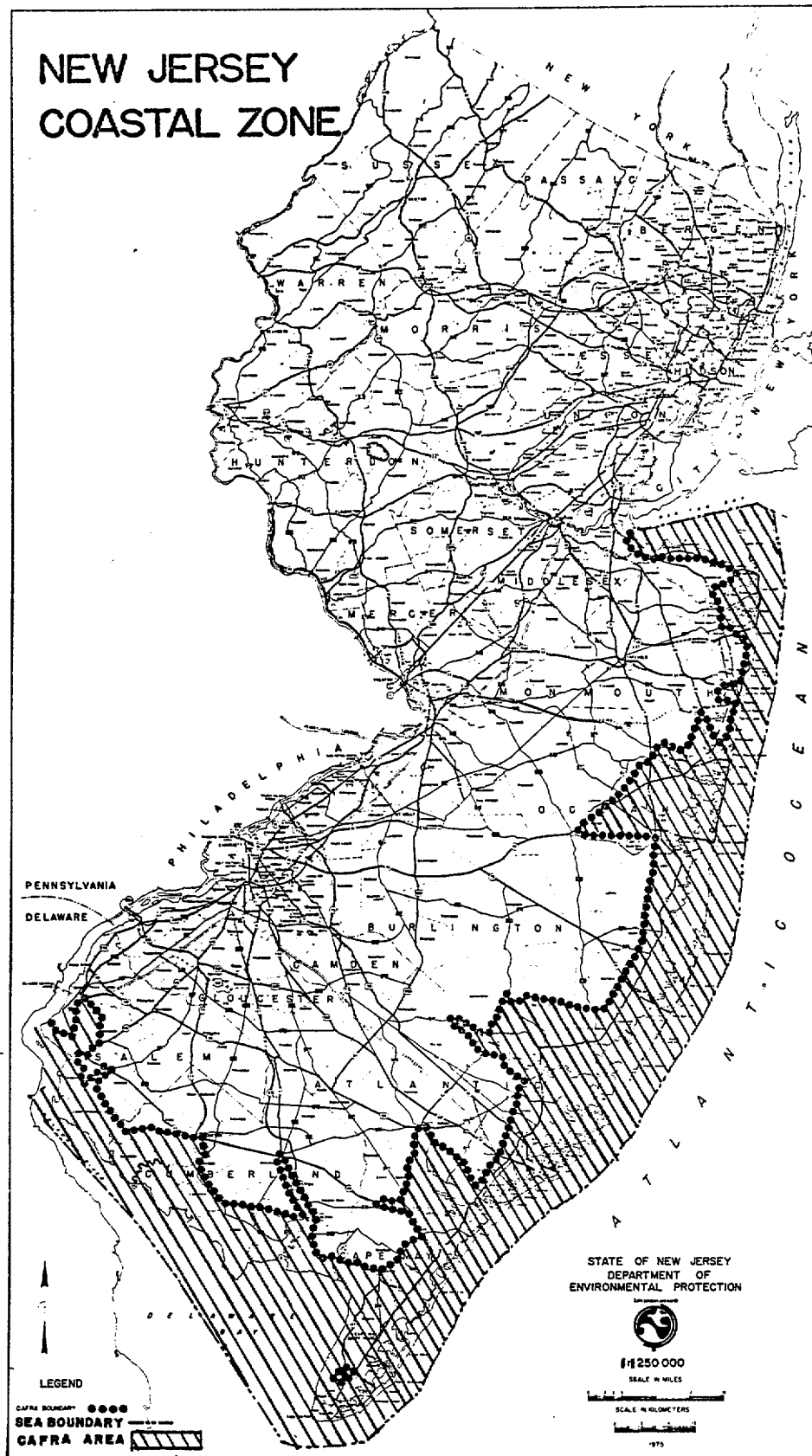


Figure 10 - CAFRA Area



The landward boundary outlined in the early versions of A-1429 began at the center of the Garden State Parkway at the midpoint of the bridge over the Raritan River. This landward boundary generally followed the Parkway in Middlesex and Monmouth Counties, with the exception of westward diversions to include the headwater of the Navesink, Shrewsbury, Manasquan, and Toms River systems. This coastal area also included the major river systems of southern Jersey: the Mullica, the Great Egg, and the Maurice. Along the Delaware River, the boundary paralleled the New Jersey Turnpike, turning westward to include Camden. North of Camden, U.S. Route 130 and U.S. Route 206 to Trenton, at the head of tide, constituted the landward boundary.

This boundary concept, with the exception of the part of New Jersey to the north of and including the Raritan estuary, incorporates nearly all of the land and water features considered to be coastal under various interpretations of the requirements of the Federal Coastal Zone Management Act. This alternative concept also includes extensive upland areas adjacent to these coastal features.

Figure 11 presents the landward boundary of the original CAFRA Area.

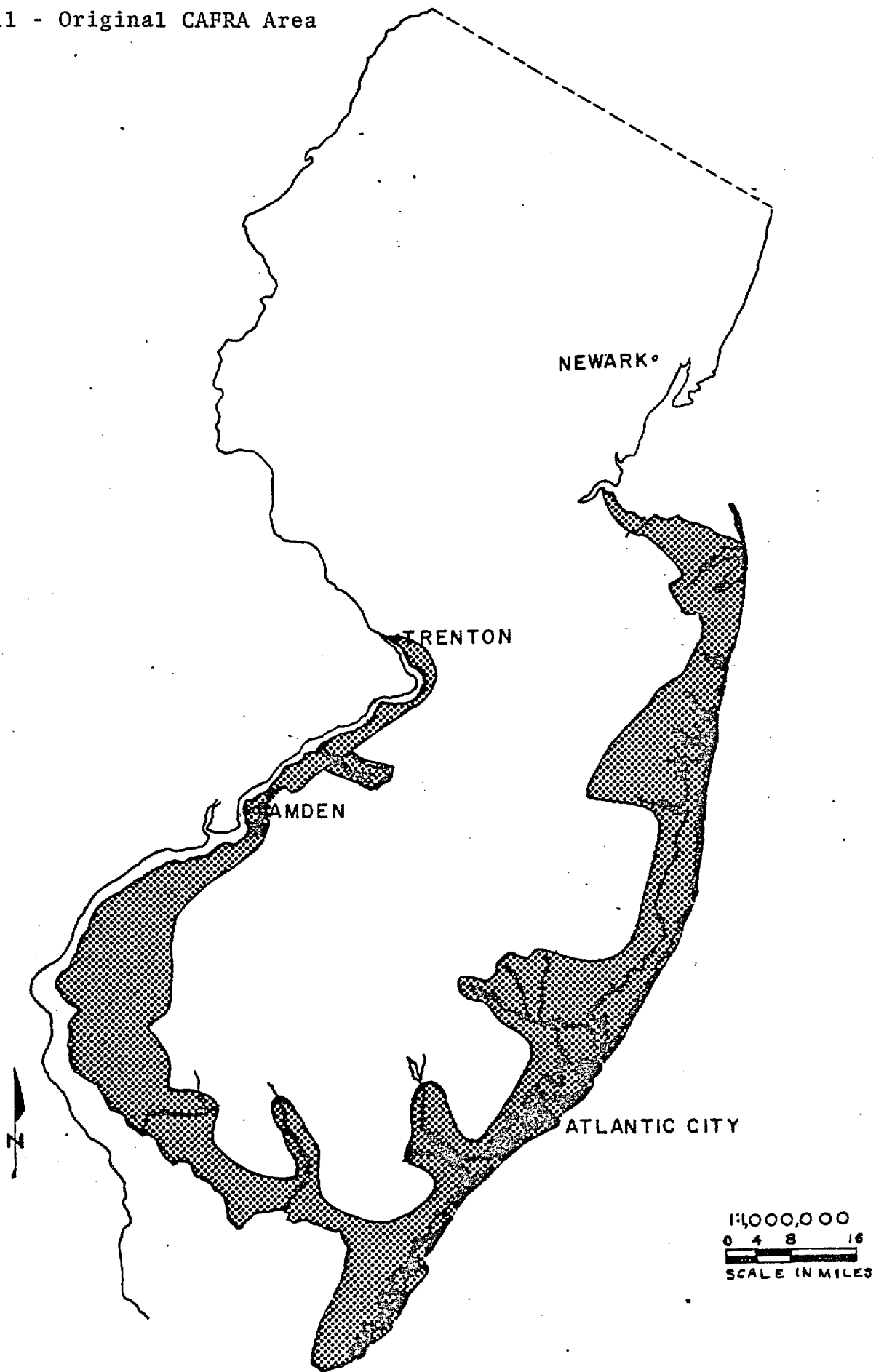
Concept No. 6 - Pine Barrens/Selected Watersheds

Using a broader definition of "direct impact" on coastal waters, selected watersheds with clearly identifiable relationships to coastal waters could be incorporated in the coastal zone. Various definitions of "significance" would also assist in the determination of which, if any, watersheds merit inclusion in the coastal zone. Watersheds to be included in the coastal zone would be selected on the basis of the unique or special natural resource characteristics of the watersheds themselves, as well as the relationship of existing and potential activities within each watershed to coastal waters.

Because of the close surface and groundwater connection between the Pine Barrens areas and the coast, as well as the fragile and unique nature of coastal waters and land features in the Pine Barrens watershed, these areas are probably of the greatest coastal concern.

Using a combination of direct as well as indirect management tools, including water quality standards, this alternative concept would enable the state to manage those uses the potential impacts of which on hydrologic systems draining to coastal waters are cause for concern.

Figure 11 - Original CAFRA Area



By itself, a coastal zone defined using only selected watersheds would be inadequate in terms of the requirements of the Federal Coastal Zone Management Act. Conceivably, however, parts or all of the watersheds directly related to coastal waters could be used to define the coastal zone boundary.

Figure 12 identifies selected Pine Barrens watersheds, the Mullica, Cedar Creek, and Forked River drainage basins, on a drainage basin map of New Jersey.

Concept No. 7 - Coastal Plain

The entire geological province known as the Coastal Plain, the area southwest of the fall line (which runs approximately northeast to southwest across the state, parallel to the Amtrak-Conrail mainline), could be included within the coastal zone. A broad definition of "direct and significant" impacts, including both the cause for concern concept, and the direct chain of causality to an impacting activity concept, would be used for this alternative.

The coastal plain is highly uniform with respect to numerous factors critical to resource management. For example, river systems draining into the Delaware River and the systems draining into the Atlantic Ocean meet at the center of the coastal plain. Also, the geology of the plain, characterized by clay, sand, gravel, and other unconsolidated sediments, is extremely uniform throughout the region. These considerations recommend the coastal plain as a possible coastal zone. On the other hand, the location of the geologic fall line in New Jersey is not closely related to the extent of either salt water intrusion or tidal influence. Finally, the coastal plain does not reach to the northeastern parts of the state and therefore by itself would be unacceptable to NOAA-OCZM.

Figure 13 displays the coastal plain.

Concept No. 8 - State

The most comprehensive and broad operational definition for "direct and significant" impact comprises all impacts on coastal waters that are measurable and that can be traced from an impacting activity through a direct chain of causality. Some activities, such as agriculture or specified industrialized processes, could produce a measurable change in coastal waters if the activity occurred anywhere in the state of New Jersey. Therefore, the entire land and water area of the state represents a logical alternative concept for New Jersey's coastal zone.

Figure 12 - Pine Barrens/Selected Watersheds

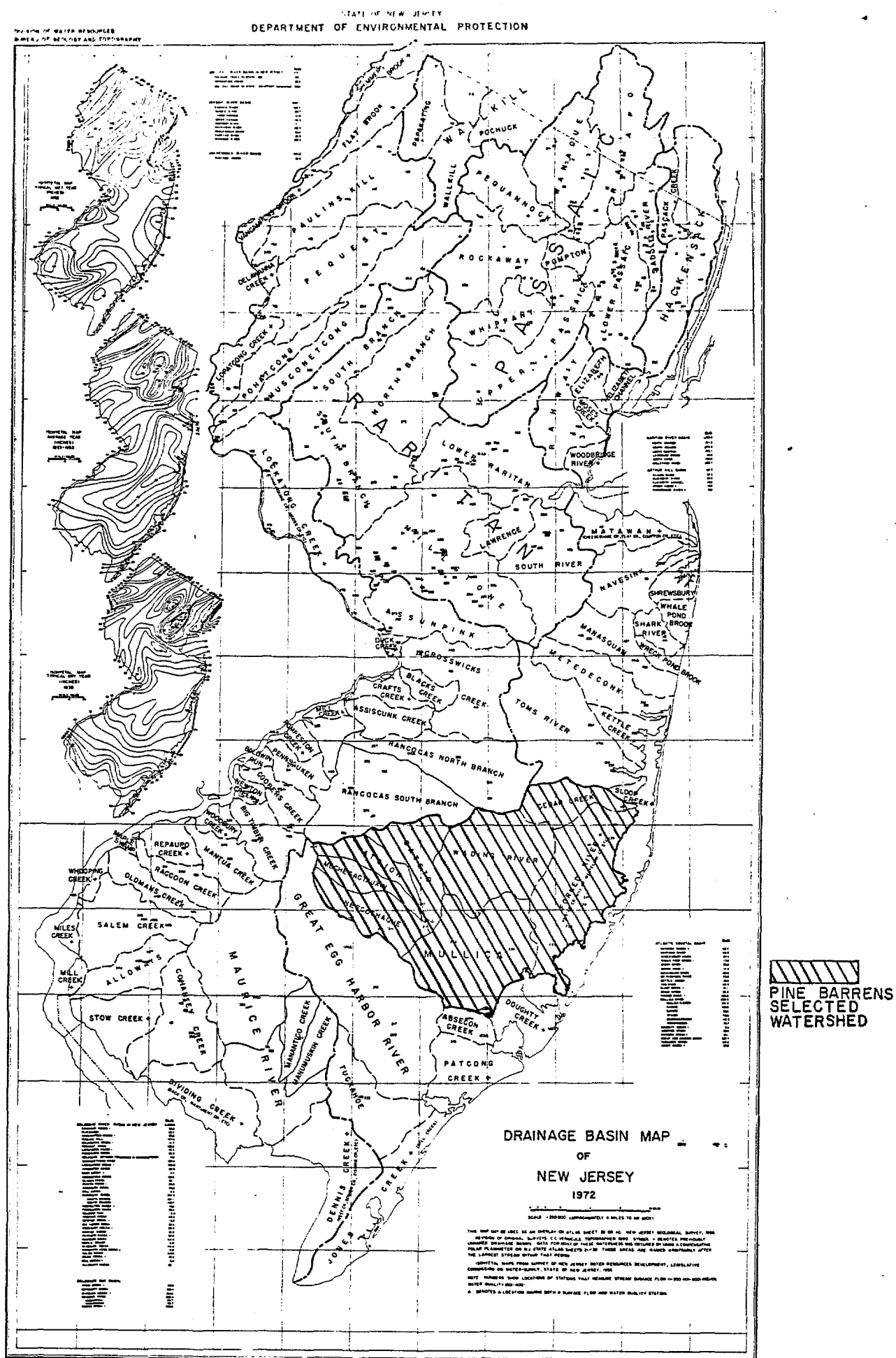
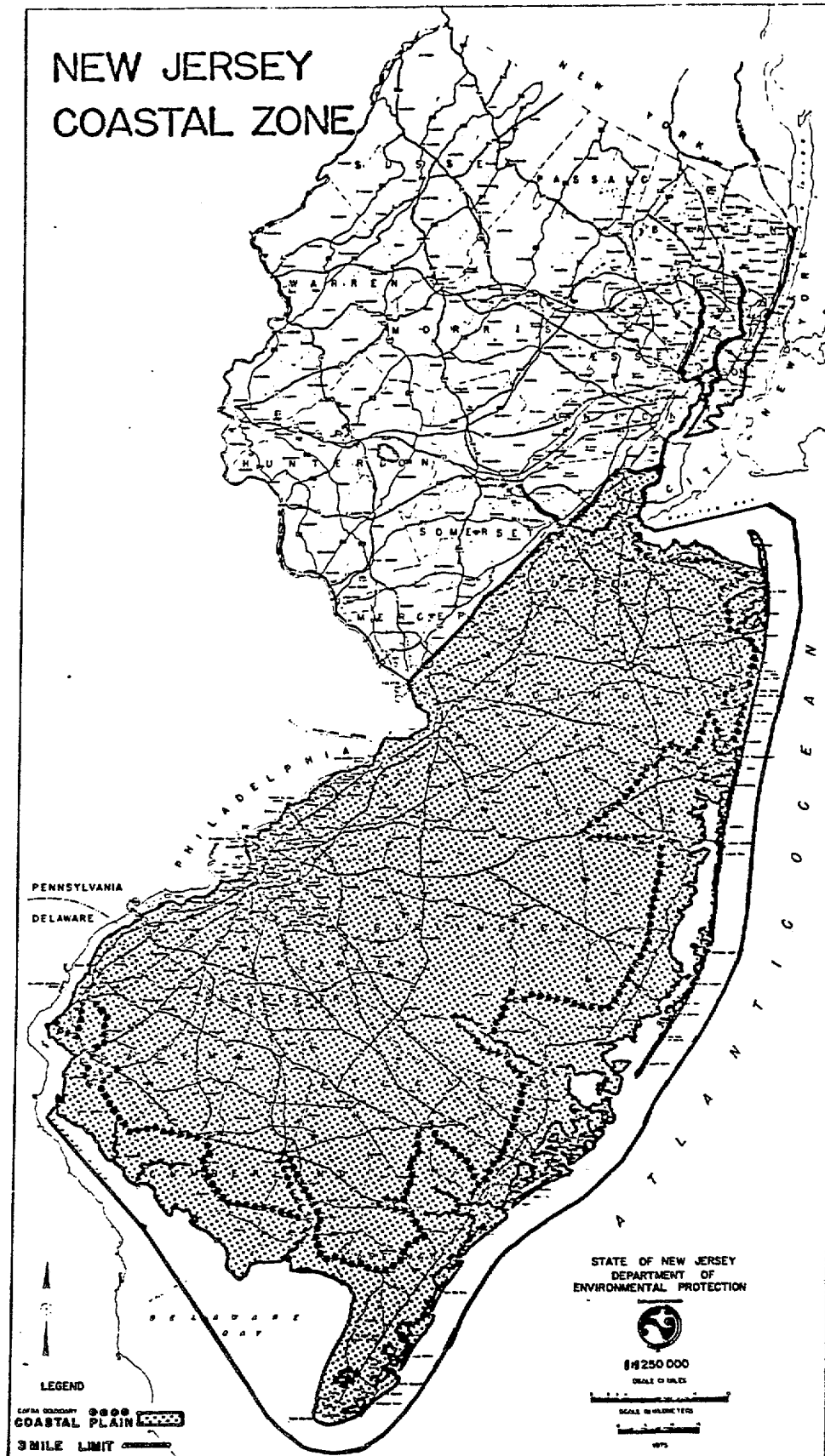


Figure 13 - Coastal Plain



The NOAA-OCZM boundary threshold paper indicates that an entire state may be included in the coastal zone. For example, this is the approach taken in Hawaii, which has a comprehensive statewide land use and resource management system, one that supercedes municipal and county land use regulatory and planning responsibilities.

By insuring that no existing or projected use with a potential for affecting coastal waters would be excluded from coastal management, this boundary concept is, from the perspective of resource management only, the most satisfactory. However, this far reaching alternative would lead to management of uses that while logically related to coastal waters are, in fact, only distantly related to effects on coastal waters.

Figure 14 indicates this alternative concept.

Concept No. 9 - Hackensack Meadowlands Development Commission District

The 19,600 acre District managed by the Hackensack Meadowlands Development Commission in, but not of, the New Jersey Department of Community Affairs (N.J.S.A. 13:17-1 et. seq.) would constitute an important geographic entity of the coastal zone. The unique character of this largely undeveloped expanse of salt marsh and wetlands was recognized by the Legislature in 1968, in legislation that established the Commission.

The Commission, and its master plan, as implemented through its adopted zoning ordinance, subdivision ordinance, and development review procedures, could be incorporated within the coastal zone boundary, as well as entirely within the coastal zone management program. Under this concept, the legislatively-defined boundary for the Hackensack Meadowlands Development Commission District would constitute an element of the coastal zone boundary in Bergen and Hudson Counties.

Figure 15 presents the boundary of the Hackensack Meadowlands Development Commission District.

Concept No. 10 - Urban Waterfront

NOAA-OCZM recognized explicitly, in its boundary threshold paper, that coastal zone boundary determinations in "urban or greatly modified areas" may rely on factors other than natural ecosystems, including the strong influence of waters upon the land, physical access, waterfront dependency, and visual relationships between land and water.

Figure 14 - State

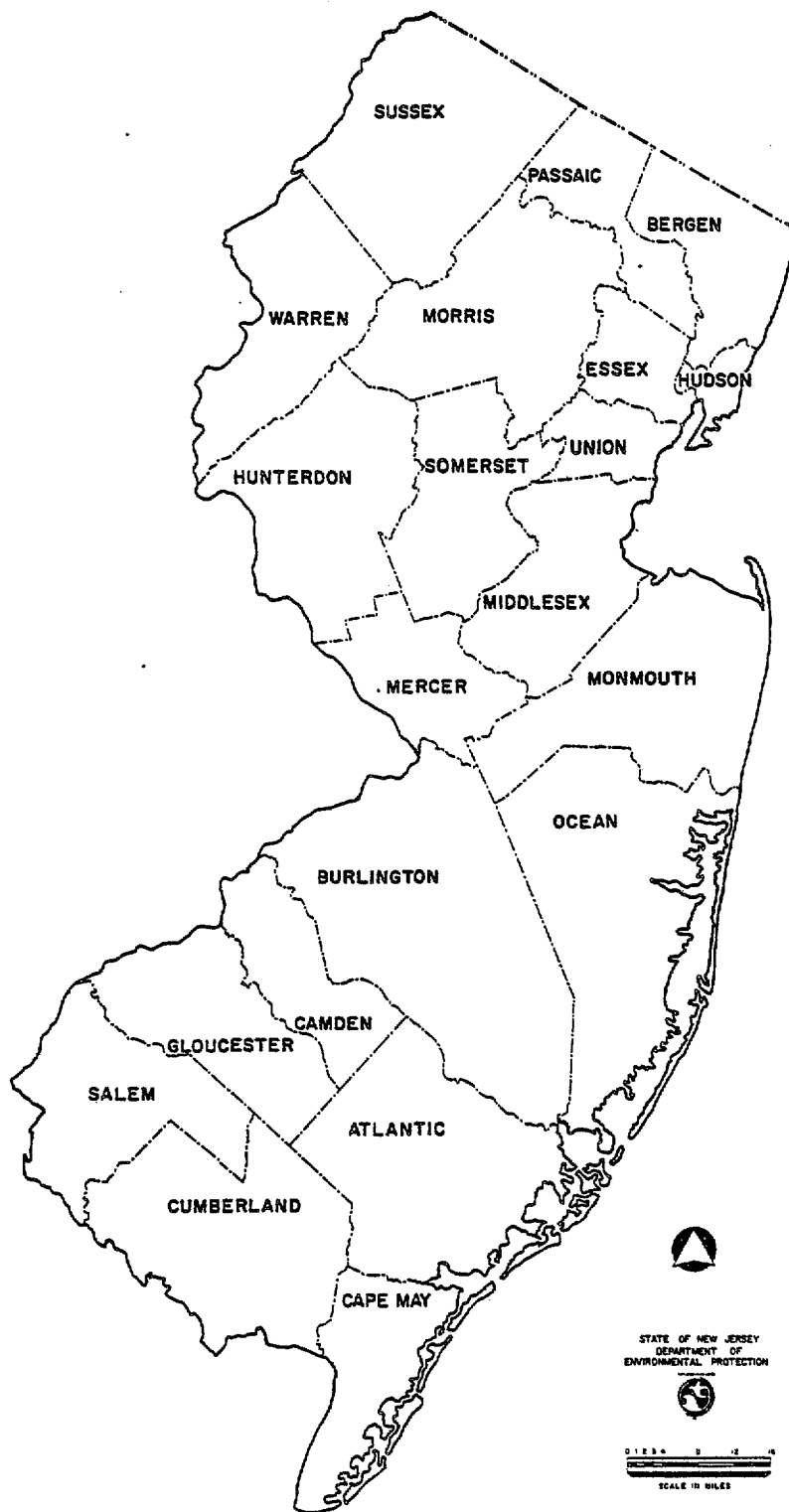
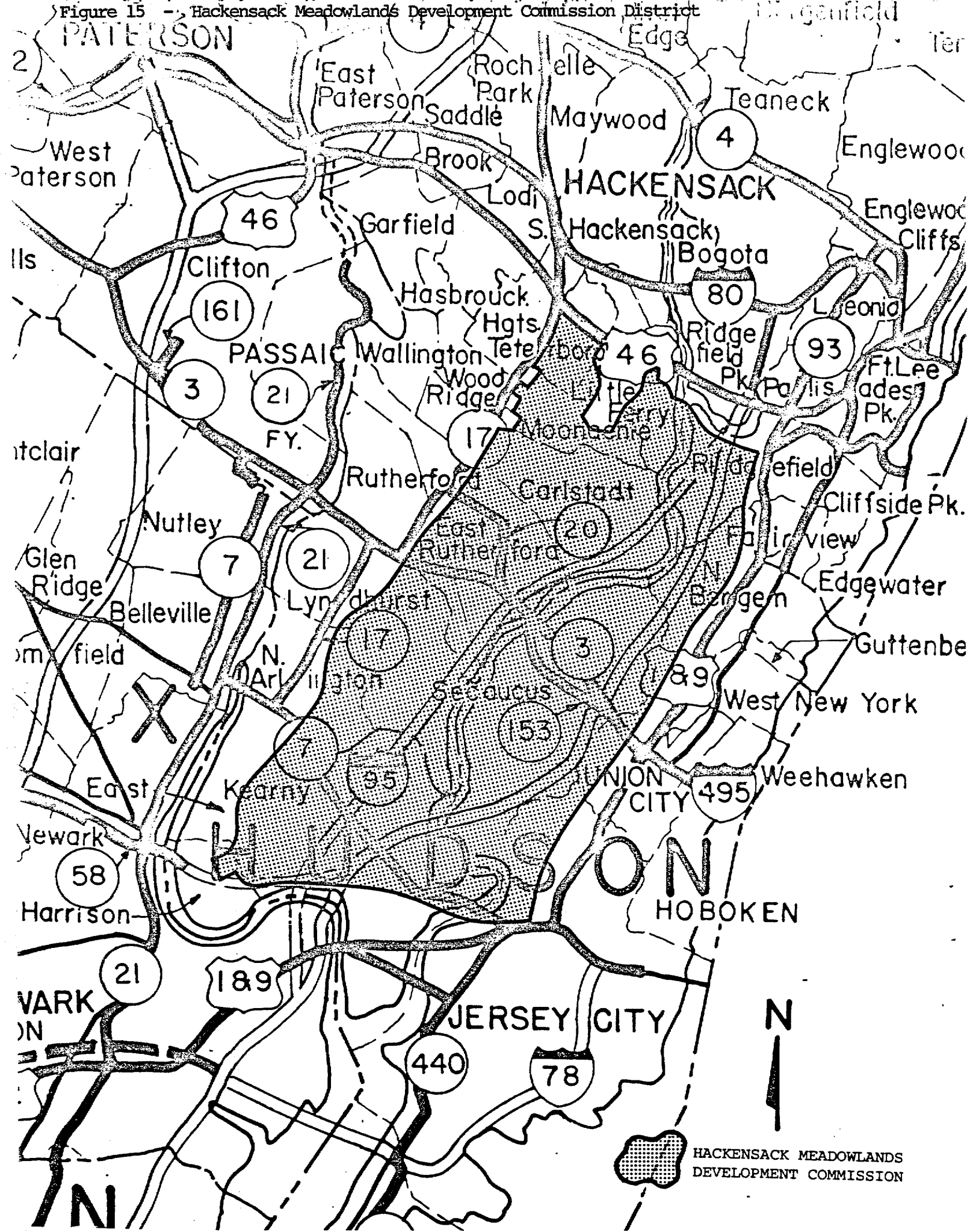


Figure 15 - Hackensack Meadowlands Development Commission District



Given the scale and intensity of commercial, industrial, transportation, and energy facility development that has occurred along the New Jersey coast north of the Raritan River, a specialized coastal zone boundary suited to existing management constraints and the status of the built environment may well be appropriate for this portion of New Jersey's shoreline. In urban waterfront areas, including the built-up shoreline north of the Raritan Bay and parts of the Delaware River, the coastal zone would include those land and water use activities that occur in coastal waters or require the use of coastal waters. The mean high tide line, which in many cases has been bulkheaded or turned into a pier or wharf, would constitute the landward boundary of the coastal zone. The waterfront development permit application and riparian lands management programs of the Department would constitute the primary implementation authority for direct state coastal land use decision making along the urban waterfront area.

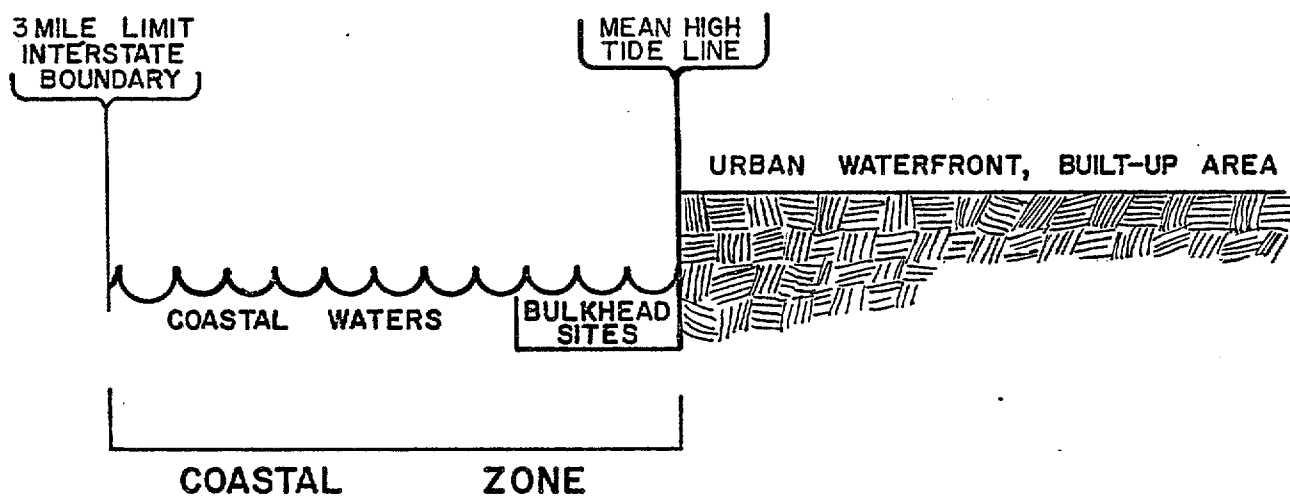
Alternatively, the urban waterfront landward boundary could be defined as all waterfront parcels of land, both vacant and undeveloped lands immediately upland from coastal waters. This variation of the urban waterfront landward boundary concept might apply with particular relevance in Middlesex, Union, Essex, Passaic, Hudson, Bergen, Camden, and Burlington Counties.

Also, visual relationship to land features such as the Palisades could be used to define the coastal zone boundary.

Figure 16 sketches how the recommended urban waterfront concept would work.

Figure 16 - Urban Waterfront

URBAN WATERFRONT



CAFRA AND BOUNDARY ALTERNATIVES

The region covered by the CAFRA statute includes some land areas which would not necessarily be included in the coastal zone, under the Federal Coastal Zone Management Act. While all of the alternative landward boundary concepts described in this paper include lands and waters outside of the present CAFRA area, three of the concepts -- Water's Edge, Water's Edge Buffer, and Flood Hazard Area Buffer -- would exclude much of the inland area presently under state regulation and planning under the Coastal Area Facility Review Act.

On the other hand, the CAFRA boundary could be extended to include areas of the state presently outside of the Coastal Area, for example all those areas in the state that would be included in the water's edge buffer.

EXCLUDED FEDERAL LANDS

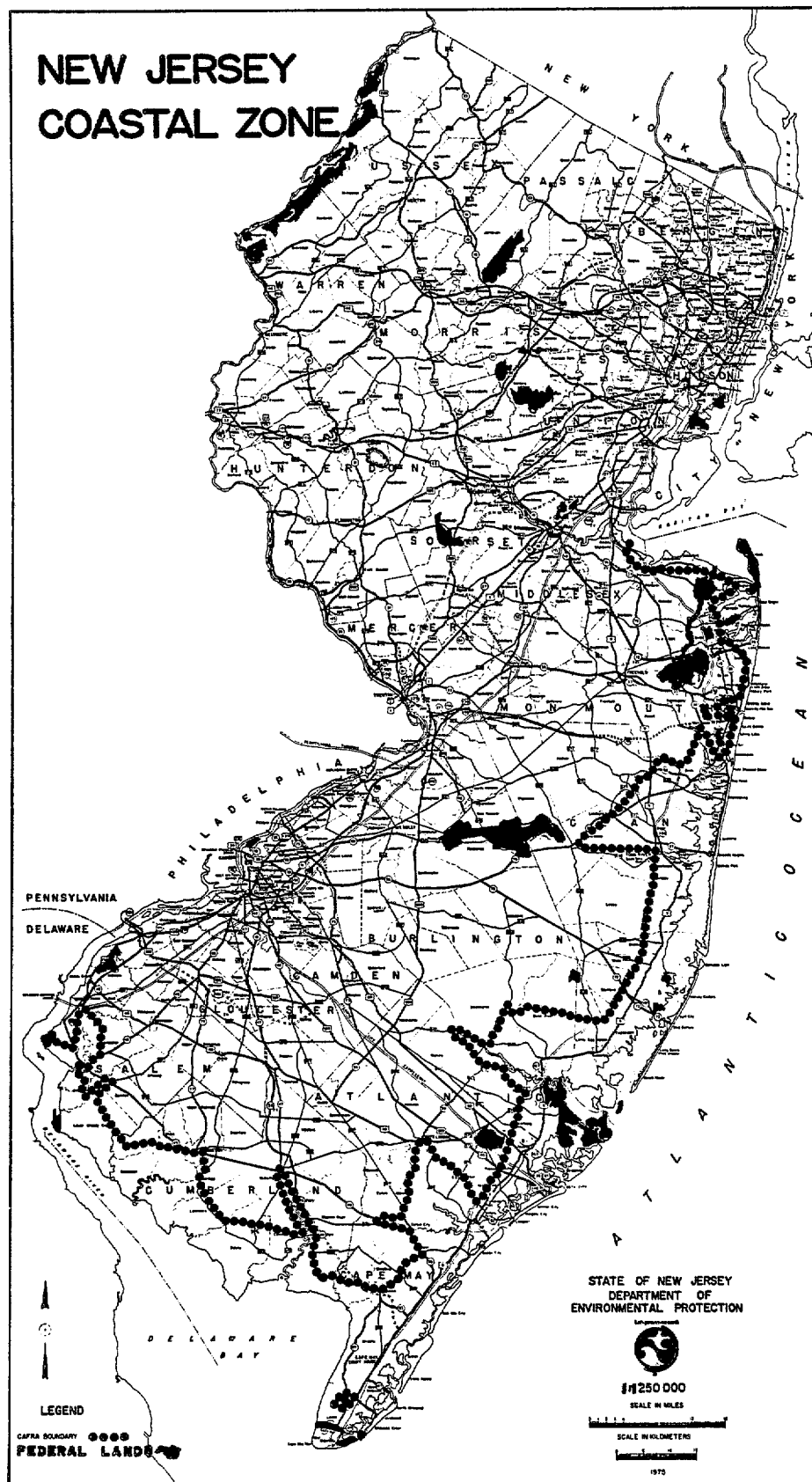
Under the Federal Coastal Zone Management Act, certain lands must be excluded from the state's coastal zone boundary. Section 304 (1) provides that "Excluded from the coastal zone are lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government, its officers, or agents."

In New Jersey, this means according to a recent interpretation by the U. S. Attorney General, that Gateway National Recreation Area at Sandy Hook, the U.S. Navy Ammunition Complex at Leonardo and Earle, the Brigantine National Wildlife Refuge, various Coast Guard facilities, and other federal installations will be excluded from New Jersey's coastal zone.

Figure 17 generally locates the federal lands to be excluded from New Jersey's coastal zone.

The Federal Coastal Zone Management Act does require, however, that federal actions elsewhere in the coastal zone be consistent with an approved coastal zone management program.

Figure 17 - Excluded Federal Lands



CONCERN FOR UPLANDS BEYOND THE COASTAL ZONE

As long as the coastal zone boundary does not include the entire state (Concept No. 8), it must be recognized that some activities that occur outside the boundary may still affect coastal waters. This suggests two concerns.

First, the manner of use of uplands beyond the coastal zone would still be managed by some of the same state-wide performance standards and indirect measures that would also apply, using specific coastal policies to the second tier of the Water's Edge Buffer. In these upland, non-coastal areas, the State's agreements and technical assistance efforts with the public and governmental agencies should assist in protecting coastal waters.

Second, New Jersey should expect that some activities may be displaced inland beyond the coastal zone boundary simply to avoid any measures of land and water use management specific to the coastal zone.

After selecting a coastal zone boundary, New Jersey should maintain a concern for upland activities outside the coastal zone, but the state's coastal zone management agency should by definition concentrate its efforts on the defined coastal zone.

CHANGES IN THE BOUNDARY

In selecting a boundary for the coastal zone, New Jersey should recognize that revisions in the boundary may be appropriate in the future, based on changes in the built or natural environment, different legal and political imperatives, shifts in public attitudes, and greater understanding of the complicated relationships in coastal ecosystems. One example of a likely change is the mean high tide line, an important ingredient of the definition of the Water's Edge, proposed in several landward boundary concepts. As the State's Tidelands Delineation Program progresses, the precise location of the historical mean high tide line will be established and mapped at a scale of 1:2,400, consistent with New Jersey judicial decisions that the State owns lands now or formerly flowed by the mean high tide. Consequently, certain uplands formerly flowed by the tide will then come under claim of State ownership; the geographic extent of the Water's Edge concept may then change.

Other changes may take place, too, perhaps in response to new pressures or the result of new interpretations of New Jersey needs that ought to be addressed under the Federal Coastal Zone Management Act. Unknown future benefits may also lead to broader or narrower coastal zone boundaries.

THE NEXT STEPS IN THE BOUNDARY IDENTIFICATION PROCESS

This staff working paper aims to stimulate debate and provoke comments on the appropriate scope and operational definition of New Jersey coastal zone. Suggestions, deletions, questions and other comments on this working paper are welcome and should be sent to New Jersey Office of Coastal Zone Management, P. O. Box 1889, Trenton, New Jersey 08625. Public workshops, informal meetings, and formal conferences focusing of alternative boundaries for New Jersey's coastal zone will also be convened using this staff working paper as a springboard for discussion.

Upon completion of ongoing DEP-OCZM impact analysis, opportunity analysis, and value analysis as a part of New Jersey's land and water use and geographic areas of particular concern planning process, the results of environmental suitability analyses in the spring of 1976 may well lead to staff recommendations on revisions to the preliminary working coastal zone boundary offered in this paper.

APPENDIX 1

TIDAL WATERS OF NEW JERSEY

Source: New Jersey Department of Environmental Protection,
Division of Fish, Game, Shellfisheries, "Compendium
of New Jersey Fish Laws, Including Regulation of
1976 Fish Code", 1976, pp. 18-21

<u>Name of Water</u>	<u>Approximate Tidal Limit</u>
ATLANTIC COUNTY	
Great Egg Harbor River	Mays landing Mill Dam
Middle River	None-all tide water
Mullica River	Pleasant Mills Dam and/ or County Bridge Rt. 542
Nacote Creek	Port Republic Dam
Patcong Creek	Bargaintown Lake Dam
BERGEN COUNTY	
Hackensack River	Oradell Dam
Hudson River	State line
Passaic River	Dundee Dam at Garfield
BURLINGTON COUNTY	
Assisicunk Creek	Suttons Bridge-Old York Rd., Burlington Twp.
Bass River	Fir Bridge on State Rd. in Bass River State Forest
Batsto River	Highway Bridge at Rt. 542
Blacks Creek	Columbus-Bordentown Rd. Bridge on Rt. 206
Crafts Creek	Bustleton-Hedding Rd. Bridge
Crosswicks Creek	Former Damsite at Crosswicks Creek
Delaware River	None-all tide water

Name of WaterApproximate Tidal Limit

BURLINGTON COUNTY

Mullica River	West Br.-Pleasant Mills Dam and/or County Br. Rt. 542
Pennsauken Creek -No. Branch	P.C.R.R. Crossing Bridge-Moorestown
Pennsauken Creek -So. Branch	Rt. 38 Bridge
Pomeston Creek	Dam on Rt. 130 Cinnaminson Two.
Rancocas Creek -No. Branch	Mt. Holly Mill Dam
Rancocas Creek -So. Branch	East Br. of So. Branch Vincetown Dam; West Branch of So. Br. Kirbs Mill Dam
Swedes Creek	R. R. Bridge Rt. 543
Wading River	On East Br.-Harrisville Dam on Chatsworth-New Gretna Rd.
Wading River	On West Br.-Bridge Rt. 563

CAMDEN COUNTY

Big Timber Creek	Dam at Balckwood Lake
Cooper River	Dam at Kaighn Ave., Camden
Delaware River	None-all tide water
Newton Creek	East of Dam at Audubon; North of Rt. 168 at West Collingswood and Oaklyn
Pennsauken Creek	Bridge Rt. 38

Name of WaterApproximate Tidal Limit

CAPE MAY COUNTY

Bidwells Creek	None-all tide water
Cedar Swamp Creek	None-all tide water
Dennis Creek	None-all tide water
East Creek	Drive road along side of Burks Game Preserve
Tuckahoe River	Lower Rt. 49 Bridge
West Creek	West Creek Lake

CUMBERLAND COUNTY

Andrews Creek	None-all tide water
Back Creek	None-all tide water
Cedar Creek	Dam at Cedar Lake, Cedarville
Cohansey Creek	Spillway, Sunset Lake, Bridgeton
Diving Creek	French Mill
E. Menantico Creek	Route 55
Fairton Cr.-Tributary of Cohansey	Dam at Clarks Pond, Fairton
Fishing Creek	Heads in Tide Water Ponds
Fortescue Cr. Br. of Oranoken Cr.	None-all tide water
Manumuskin River	Fries Mills, E. side of Bridge
Maurice River	Dam at Union Lake Millville
Muskee Creek	E. side of bridge on Weathersby Rd.
Nantuxent Creek	Dam at Shaws Mill Pond

Name of WaterApproximate Tidal Limit

CUMBERLAND COUNTY

Oranoken Creek	Whitecar Mill
Oyster Creek	Heads in Tide Water Ponds
Riggins Creek	Leesburg Prison Farms
Sow and Pigs Br. of Nantuxent	Heads in Tide Water Ponds
Stow Creek	Jerrico Bridge
Straight Creek	Heads in Tide Water Ponds
West Creek	Dam at West Creek Lake

ESSEX COUNTY

Bound Creek	None-all tide water
Passaic River	Dundee dam at Garfield

GLOUCESTER COUNTY

Big Timber Creek	Dam at Blackwood Lake
Delaware River	None-all tide water
Mantua Creek	Above Wenonah Bridge, Mantua to Wenonah
Oldmans Creek	Bridge Swedesboro Sharptown Rd.
Raccoon Creek	Second bridge above Swedesboro
Woodbury Creek	Dam, Broad Street Woodbury

HUDSON COUNTY

Hackensack River	None-all tide water
Hudson River	None-all tide water

Name of WaterApproximate Tidal Limit

HUDSON COUNTY

Passaic River

None-all tide water

MERCER COUNTY

Back Creek

Dam at Gropps Lake

Crosswicks Creek

Former dam site at
Crosswicks Pond

Delaware River

Calhoun St. Bridge,
Trenton

Doctors Creek

Site of Groveville Dam

MIDDLESEX COUNTY

Cheesequake Creek

Dam Cheesequake Lake

Raritan River

5-mile Dam between New
Brunswick & Bound Brook

South River

Dam at Duhernal Lake

MONMOUTH COUNTY

Black Creek

Spillway at Ocean Rd.

Manasquan

Allenwood Bridge

Matawan Creek

Lefferts Lake Dam

Shark River

Remesen Mills Road

Shrewsbury River

Tinton Falls Rd. Bridge,
Swimming River Dam
(Lincroft). No freshwater
above Oceanport, Branchport,
Long Branch

Wreck Pond Creek

Old Mill Road Bridge

Name of WaterApproximate Tidal Water

OCEAN COUNTY

Beaver Dam Creek	Route 88
Cedar Creek	Route 9
Cedar Run	Route 9
Dinner Point Creek	None-all tide water
Double Creek	None-all tide water
Forked River	All Branches, Route 9
Gunning River	None-all tide water
Jakes Branch	Above Atlantic City Blvd.
Kettle Creek	Route 549
Manahawkin Creek	None-all tide water
Metedeconk River	Route 70 Bridge
Mill Creek	Pine Beach- Ocean Gate Rd.
Mill Creek	Dam at Manahawkin Lake
Oyster Creek	Route 9
Parkers Run	None-all tide water
Potters Creek	None-all tide water
Stouts Creek	None-all tide water
Toms River	So. Main St. Bridge
Tuckerton Creek	Dam Route 9
Waretown Creek	Route 9
West Creek	Route 9

Name of WaterApproximate Tidal Limit

PASSAIC COUNTY

Passaic River

Durdee Dam at Garfield

SALEM COUNTY

Alloway Creek

None; tide water to
Alloway Gate Hold

Black Ditch

None; tide water to head

Delaware River

None-all tide water

Fishing Creek

None; tide water to head

Hope Creek

None; tide water to head

Mad Horse Creek

None; tide water to head

Mill Creek

None; tide water to head

Oldmans Creek

Bridge, Swedesboro-
Sharptown Rd.

Salem Creek

None; tide water to dam

Stow Creek

Jerico Bridge

Straight Ditch

None; tide water to head

UNION COUNTY

Bound Creek

None-all tide water

Dutch Creek

None-all tide water

Elizabeth River

West Grand St., Elizabeth

Morses Creek

Old Morses Mill Rd.

Oyster Creek

None-all tide water

Piles Creek

None-all tide water

Rahway River

Grand St. Bridge, Rahway

APPENDIX 2

COASTAL ZONE BOUNDARIES IN OTHER STATES

Thirty-four coastal states and territories are developing management programs under the Federal Coastal Zone Management Act and must define a coastal zone boundary. Several states have already selected a boundary; others have defined recommended or working boundaries. This appendix briefly surveys the state-of-the states in coastal zone boundary definition in order to provide a basis for comparing the alternative concepts outlined for defining New Jersey's coastal zone boundary. This appendix concentrates on the landward boundary of the coastal zone.

Delaware

The Delaware Coastal Zone Act of 1971 (Chapter 70, Title 7, Delaware Code) established an initial regulatory boundary described by certain roads and ranging from 1-7 miles inland from coastal waters. In September 1976, the Delaware State Planning Office, the designated coastal zone management program development agency, recommended that the entire state be included within a general management boundary under the Federal Coastal Zone Management Act. Also proposed were the definition of specific management or regulatory zones in the course of identification of geographic areas of particular concern.

Pennsylvania

The Delaware Valley Regional Planning Commission (DVRPC) is preparing the Delaware River element of Pennsylvania's coastal zone management program. The working boundary definition used by DVRPC includes: (a) all waterfront parcels and contiguous vacant properties, (b) all lands within the hundred-year flood plain and (c) all lands under tidal influence. This results in a comparatively narrow boundary. In addition, all remaining areas with a "direct and significant" impact on coastal resources and "geographic areas of particular concern" will be in the zone.

New York

New York State has contracted with the New York City Planning Commission for coastal planning under the Federal Coastal Zone Management Act. The present preliminary boundary of the New York coast facing New Jersey reflects its diversity -- garbage dumps and tidal marshes in Staten Island, the built-up waterfront of Manhattan, and cliffs of the Bronx at Riverdale.

This preliminary boundary is defined by community planning board districts, contains water's edge, waterfront and coastal upland zone, and includes all or part of all five boroughs.

Washington

In June 1976, the U.S. Secretary of Commerce approved the management program of the State of Washington under the Federal Coastal Zone Management Act. This approved coastal zone boundary has two tiers, as defined by the Shoreline Management Act of 1970 of the State of Washington. The first regulatory tier includes all wetlands and all upland areas 200 feet from the ordinary high water mark. The second tier -- the planning and administrative boundary -- includes all of the land area of 15 coastal counties that front on marine waters.

Texas

The proposed Texas coastal zone does not include any land area. Rather, it includes bay and estuarine areas, tidal areas, salt marshes, and grasslands.

California

Under California law enacted in the summer of 1976, the landward boundary of the coastal zone is defined as extending inland 1,000 yards from the mean high tide line. In significant coastal estuarine and recreational areas, the coastal zone extends inland to the first major ridge line paralleling the sea, or five-miles from the mean high tide line of the sea, whichever is less. In developed urban areas, the zone generally extends inland less than 1,000 yards.